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ABSTRACT

The recruitment and retention of Asian computer professionals by Canadian high-tech companies was examined by interviewing 8 Canadian-born information technology (IT) workers, 47 Asian-born IT workers, and 8 human resource (HR) professionals employed by high-tech companies in Ottawa. Of the 47 Asians, 33 stated that they did not know much about Canada before coming to Canada, and 41 did not experience any difficulties getting visas for themselves. Although the Canadian and non-Canadian IT workers had similar perceptions regarding workplace-related issues, 12 of the Asia workers complained of subtle discrimination at work. Twenty-nine Asian workers reported considering moving to the United States versus only two Canadian workers. All eight HR professionals spoke highly of the Asian IT professionals and their technical competence, although several expressed concerns about Asian workers' ability to communicate. Many Asian workers appeared to have misconceptions about tax rates, living costs, and employment opportunities in Canada and the United States. It was concluded that the Canadian government could help improve recruitment and retention of Asian IT workers in Canada by enabling them to bring their educated relatives from their homelands and by facilitating closer interaction and partnerships between educational institutions and the high-tech sector. (The bibliography lists 17 references. The interview guide and questionnaire are appended.) (MN)

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CPRN Discussion Paper

ECONOMIC MIGRANTS IN A GLOBAL LABOUR MARKET

A REPORT ON THE RECRUITMENT AND RETENTION OF ASIAN COMPUTER PROFESSIONALS BY CANADIAN HIGH TECH FIRMS

by

BADRINATH RAO

for

Strategic Policy, Planning and Research
Citizenship and Immigration Canada

and

Labour Market Policy
Human Resource Development Canada

July 2001

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Executive Summary

This research project on the recruitment and retention of Asian computer professionals by Canadian high tech companies is based on detailed structured interviews with high tech professionals and their employers. In all, we interviewed 55 information technology (IT) workers and eight human resource (HR) professionals employed by high tech companies in Ottawa.

The interviews were conducted with the following main objectives:

a. To investigate the motivations, aspirations, and expectations of Asian IT professionals working in Canada, and their experiences of the Canadian high tech environment. This project seeks to probe the strengths and inadequacies of the high tech workplace, as seen through the eyes of different sections of the IT workforce.

b. To examine the adequacy of the strategies adopted by Canadian IT industries to deal with the apparent shortage of skilled professionals, and particularly, their attempts to make the work environment attractive to computer professionals, and to understand the high tech sector's experiences with, and perceptions of, Asian IT workers.

c. To isolate the possible factors that affect the decision of the IT workers to either stay in Canada or go elsewhere, mostly to the United States.

d. To provide insights for policy and program design in the areas of recruitment and retention in the high tech sector.

The 55 IT professionals were selected through a purposive sample using a snowball technique. They comprise the following four categories:

1. Temporary IT workers from Asia who came under the Software Development Worker Pilot Project.

2. Highly skilled IT professionals from Asia who came to Canada through regular immigration channels.

3. Asian (foreign) graduate students who joined the high tech sector in Canada after their graduation from Canadian universities.

4. Canadian-born IT workers.

Of the 55 interviewees, eight were Canadian-born workers and the remainder were IT professionals who came to Canada from different parts of Asia. Thus the major focus of the interviews was on Asian IT workers. A majority of the IT workers were software designers. Only a handful of them were specialists in computer hardware and some were working as consultants for a big IT consulting company in Ottawa.

In addition to an interview, the IT workers also completed a survey questionnaire that collected information on their technical and socioeconomic profile.

Of the eight high tech firms whose HR professionals were interviewed, three were big companies employing over 2,000 workers each, much more in two cases. Then, there were two companies that employed around 500 workers each. The remaining three were smaller companies that employed between 100 to 150 workers. Of these companies, two were multinational companies not owned by Canadians. The rest were Canadian companies. In terms of their products, broadly speaking, six companies are involved in producing software while one company is a consulting firm and one other manufactures computer hardware.

The sample size of this study is small. Its findings suggest general trends in the recruitment and retention of foreign computer professionals and indicate areas for future research. This pilot project does not provide a sufficient basis for policy prescriptions.

Employees' Perspective

The interviews highlighted several positive aspects of the IT sector in Canada. They portrayed the image of a thriving sector in which employees, by and large, are happy with their work and the conditions under which they perform it. A majority of IT workers (49 out of 55) find their work interesting and challenging. But, only 35 out of 55 respondents felt that their work utilized all their talents, abilities, and skills. Of those who felt underutilized, many were high tech immigrants and recent graduates who were just beginning their careers in Canada.

The level of motivation also appears to be high in the IT sector. Fifty out of 55 interviewees reported that their work atmosphere kept them motivated and 47 of them felt that they were improving their skills, abilities, and knowledge base on their jobs. Because of such encouraging circumstances, IT workers relate to their work well and participate in it enthusiastically. Thus 48 out of 55 employees felt that they provided enough input to the decision-making process in their groups and departments. Among those who did not subscribe to this view were a number of recent recruits who were still getting used to their new workplace. Another salient point was that 51 out of 55 interviewees were happy that their work was being appreciated and recognized. Nearly three-quarters of all IT workers were happy with the training opportunities that their company provided. The remaining one-quarter, many of them employed in smaller companies (i.e., those employing less than 100 high tech workers), reported that all their training was on the job and that, apart from product related training, they did not get any training in soft skills such as communication skills, leadership and managerial skills; and, cultural sensitivity training.

The IT sector seems to be a good place to work as a majority of workers had positive things to say about their work environment, access to facilities, and other privileges. All IT companies have adopted flexible working hours; many have made provisions for their employees to work from their homes. The work atmosphere is friendly and is based on mutual trust and respect. Thus all but one respondent reported that their colleagues were helpful and friendly. Companies allot work to their employees and expect them to complete it within specified deadlines. When

and how one works is entirely left to the discretion of individual employees. Such freedom and trust have served as motivating factors. All companies require their workers to put in 37.5 hours of work. While a couple of them pay overtime wages to their workers, most do not. Regardless, IT workers reported that they voluntarily put in, on average, 45 to 55 hours per week. Interestingly, 51 out of 55 workers said that they were happy with the extra hours of work they put in and a similar number reported that they did not consider their job stressful. All of which underscore the fact that, cutting across the four categories, by and large, IT workers in Canada are happy with their companies, the work environment, and the rewards and recognition – in the form of promotions, performance bonuses, stock options, gift items and the like – they receive for their contributions. It is no surprise, therefore, that most employees (45 out of 55) feel that their employers make genuine efforts to keep them working at their present jobs.

IT companies too have reciprocated the goodwill and hard work of the workers by providing a variety of benefits, awards, rewards, stock options, and generous compensation to high achievers. As well, they have put in place several measures to deal with diversity and harassment-related issues. These include awareness-raising programs and cultural sensitivity training.

The focus of this study was on the experiences and perceptions of Asian computer professionals. Generally speaking, they reported satisfaction with the resources, challenges, facilities, and benefits that their jobs offered. Thirty-three out of 47 Asian professionals reported that they did not know much about Canada and Canadian high tech companies before coming here. Even those who had heard about the IT companies knew only about the big and internationally renowned companies and no more.

On the question of getting their visa/immigration papers, 41 out of 47 Asian workers said they did not experience any difficulties for themselves. Yet, several Asian respondents complained that they experienced difficulties while trying to get their parents and spouses here, even for a brief visit. Some of them stated that the Canadian visa and immigration procedures were complicated and tough when compared to the United States. This perception, however, was based on anecdotal evidence and not on any clear understanding of the rules and regulations guiding immigration and visa procedures in both countries. The fact is that both Canada and the United States have reasonably comparable policies for visitors and family reunification. It would, perhaps, be helpful to clear up such misconceptions among Asian professionals.

On the whole, at the risk of some simplification, it can be said that there is not much difference in the perceptions of Canadian and non-Canadian IT workers regarding workplace related issues, except on a couple of matters such as taxation, moving to the United States, and staying in Canada for good. Another highlight of the interviews with Asian workers was that about a quarter of them (12 out of 47) complained that there was subtle discrimination at the workplace. On balance, the grievances were not serious in nature and could have arisen due to lack of proper communication.

On the question of moving to the United States to work, 29 out of 47 Asian workers said they were thinking of moving to the United States, mainly because they felt they could get better compensation, pay lower taxes, and access more opportunities. In contrast, only two out of eight

Canadian-born workers expressed their desire to work in the United States. Though the sample size for this project is small and can, at best, only be suggestive of a trend, it was clear that the Canadian-born workers, who were slightly older and well-settled here with family and children, were reluctant to move because of their family ties. But, Asian workers were relatively young and, in most cases either single or recently married. They did not have many ties to Canada such as an extended family network, and hence felt they could move to the United States easily. The retention of Asian IT workers, therefore, seems to be influenced considerably by their family situation and demographics. It would, perhaps, be a good strategy to recruit workers with families instead of singles, as the former are more likely to stay put in Canada. Regardless of their family situation, it would be useful to keep in mind that since Asian IT workers are essentially economic migrants, they tend to gravitate to a place that offers more money and opportunities.

The Canadian rate of taxation was one issue that evoked a near unanimous response. Fifty-one out of 55 employees felt that the tax rate was high. When asked if the taxes were justified considering the social security benefits that the government provides, overall, 38 respondents answered in the negative. Of these, the most vocal were Asian IT workers. Only 4 out of 8 Canadian-born workers seemed to think that the taxes were not justified, but they later qualified their comments stating that they were not opposed to taxes per se – they feared that the government would mis-spend their monies. In the case of Asian IT workers, however, their opposition to taxation was unmistakable. Their views were based on a widely shared perception that the tax rates in the United States are much lower than in Canada. Besides, their argument was that they should not have to pay for services they are not likely to use now. While it is true that the level of taxation is lower in the States, the misperception of the interviewees centered around the extent and degree of difference in taxation levels. Also, most Asian interviewees seemed to be oblivious to "hidden costs" in the United States such as user fees for services, high cost of living, and the like.

The different responses of Canadian and non-Canadian workers point to their vastly different orientations and motivations. As stated earlier, Asian workers are market-driven migrants with no roots or sense of belonging in Canada, so they see little point in supporting services that they think they do not need. Why pay for health care, for instance, when the employer provides full coverage, is their argument. Most Asian IT workers seemed to be under the mistaken impression that the American employer covers **all** health care related expenses when, in fact, most US companies do not provide full coverage. They do provide some degree of "top up" funding or full coverage for expenses not covered by health insurance. This misunderstanding needs to be clarified.

One can conclude that Asian workers are primarily interested in maximizing their earning potential and opportunities and do not seem to have a sense of belonging here, which is why they oppose taxation. So, any policy that ignores their orientation and motivation is not likely to succeed in retaining them here or in attracting new workers. It seems that an effective way of dealing with this situation would be to educate Asian workers not only about the several short and long-term benefits that Canada offers, but also the importance of paying for the privileges they enjoy here. Again, it must be emphasized that since the sample size of this study is small, a

detailed study, based on a more representative sample would, perhaps, provide a richer account of the motivations and interests of Asian IT workers.

Opinions between Canadian and Asian workers also diverge on whether or not they should stay here permanently. All but one Canadian respondent want to stay in Canada permanently because they have family ties, Canadian roots, and a sense of identity here. But, 39 out of 47 Asian workers said they were not sure whether they would remain in Canada permanently. And yet, overall, 54 out of 55 respondents said that they would recommend Canada to a friend or family member. This figure included all but one Asian respondent. If they are happy to recommend Canada to others, then, why would Asian workers not want to live here? The answer is that though Asian workers appreciate the positive features of life in Canada, they are more concerned about their economic security. They seem to think that they can attain economic security by working in the United States, while Canada is good for retirement. This ambivalence appears to be rooted in a misconception that they cannot achieve economic security in Canada given the high rate of taxes and the weak Canadian dollar. Interestingly, Asian workers did not see any contradiction in earning money in the United States and enjoying the health care benefits and high quality of life in Canada after retirement.

A significant finding of the interviews was that most Asian workers have a number of flawed impressions about living and working in the United States. For instance, they did not seem to have much awareness of the high cost of living in the United States, particularly in Silicon Valley. Some who talked about the high cost of housing in California seemed to think that their higher compensation would offset such expense. They strongly believe that the United States is almost a tax haven where as Canada taxes its workers heavily. Similarly, though a majority of Asian workers spoke highly about the high quality of life in Canada, they did not seem to care much about whether or not they would get a comparable quality of life in the United States. Asian workers thus have a notion that America is a land of opportunities and wealth, and low tax rates, where one can earn and save a great deal of money. Canada, they seem to think, lacks these qualities. Such simplistic views are based either on lack of information or plain misinformation. A major policy implication, therefore, seems to be that proper information needs to be disseminated among Asian workers about life in both countries and particularly about exciting possibilities in Canada.

Employers' Perspective

The interviews with HR professionals also produced consistent findings. All eight HR professionals confirmed that they were facing a serious shortage of skilled technical personnel. The short-term solutions to this problem they offered were: reducing taxes, particularly on stock options; relaxing the restrictions on the issuance of stock options; relaxing immigration and visa rules to enable Asian workers to bring their families; and hiring IT graduates from universities abroad.

Among the long-term measures, all HR professionals favoured a joint initiative involving government, educational bodies, and IT industries. They wanted better partnerships with high schools and universities to graduate more students specializing in IT. For example, collaborating

with the Ottawa-Carleton Research Institute to train immigrants, refugees, and new Canadians with core competencies in computing was a strategy they favoured strongly.

All HR professionals spoke highly about Asian professionals and their technical competence, although a couple of them expressed concerns about their ability to communicate. They also claimed that they were not aware of any serious instance of discrimination and said that they had compulsory diversity training for managers to deal effectively with a diverse workforce. On the question of under-representation of women in the workforce, HR professionals conceded that they were aware of it but pleaded helplessness on the ground that there were not enough female applicants for them to hire. Some of them mentioned that to encourage female IT professionals, they had instituted scholarships in local high schools and universities.

It must be pointed out that though the suggestions of HR professionals seem to be relevant and are based on their experiences in recruiting and retaining IT workers, some of the changes they suggest do not lend themselves to easy implementation. For instance, facilitating the migration of the family members of IT workers alone and not of those in other sectors, could lead to potential problems. Besides, even if the rules were streamlined across the board for all types of foreign workers, they could potentially conflict with the general objectives of family class immigration and / or visa policies.

On a related note, many of the eight HR professionals interviewed seemed to have based their views on inaccurate information, particularly with respect to immigration policies. Hence, they too could benefit from the dissemination of correct information.

Key Conclusions and Issues

The situation in the IT sector in Canada and elsewhere in the world has changed considerably since the time the interviews were conducted. The pace of growth in the IT sector has slowed down considerably, thereby reducing the demand for high tech workers. The value of stock options has diminished. Another significant development is the move in the United States to further reduce taxes. Though Canadian governments have initiated similar measures, it could trigger the demand for a fresh round of tax cuts. Obviously, given its size and geography, Canada cannot remain immune from changes taking place south of the border. The fluctuations in the global labour market for IT-related skills has also affected recruitment and retention strategies in Canada. Opinions about the likely impact of these changes and their duration are divided. Some of these changes are considered transient while others are likely to have far-reaching consequences. Regardless of the current downturn in the demand for IT skills, which some think will change in the near future, this study has yielded useful insights about the recruitment and retention of high tech workers.

Briefly, the key conclusions and issues arising from the interviews are as follows:

1. In the newly emerging, IT-driven world economy, Asian computer professionals are "citizens of the world." In other words, they are market-driven migrants whose main objective is to

seek career opportunities that will enable them to maximize their earnings and savings in the shortest possible time. Asian IT workers have uprooted themselves from their homelands and come here in their quest for a better life. However, in most cases, Canada does not seem to be their final destination. Though they see many positive features in their jobs and in their lives in Canada, Asian IT professionals have not sunk roots in this country. Instead, the majority of them are attracted to the United States as it offers better career prospects, more disposable income, and the opportunity to work with some of the best and brightest people in their areas. It would useful to appreciate these factors while framing policies concerning recruitment and retention.

2.

a) In stark contrast to their fascination for the United States, the majority of Asian high tech professionals did not know much either about Canada or its IT industries before they came here. From the interviews, it became apparent that with greater publicity about our world class IT companies and our thriving IT sector, more knowledge workers might be interested in coming to Canada. Thus, agencies of the federal government, including embassies and high commissions, could collaborate with IT industries, professional bodies, and trade-related bodies to launch a publicity campaign in countries such as India and China.

b) On a related note, the visibility and profile of Canada among people abroad appears to be much lower than that of other Western industrialized nations, particularly the United States. Creating greater awareness about the positive aspects of life in Canada would be very helpful. Most people abroad do not seem to know much about the high quality of life in Canada, its multiculturalism, flourishing economy, and the myriad opportunities it provides for developing one's potential. Canada could highlight its strengths as one of the best places to live in the world. Those who know about Canada seem to have the impression that it is good for living peacefully, but that for professional success, entrepreneurial work, and accumulation of wealth, the United States is the best place. Such misconceptions could be corrected through providing objective and up-to-date information about what life is like at other high tech destinations in the United States. Simultaneously, Canada could be marketed as a unique country where one can enjoy both professional success and a superior quality of life.

3. One of the most significant findings of the interviews is that Asian IT workers appear to be misinformed or have misconceptions about a number of issues relating to life in Canada and the United States. Specifically, they have incorrect information in three areas: tax rates in Canada and the United States, cost of living and opportunities in both countries, and rules and regulations guiding visa and immigration procedures. Generally speaking, Asian workers subscribe to the notion that the United States offers better career opportunities and charges less taxes. While it is true that tax levels in America are lower than in Canada, Asian IT workers seem to be misinformed about the extent and degree of difference in taxation rates. They also seemed to be oblivious to the hidden costs in America. Furthermore, Asian IT workers think that it is slightly easier to bring one's spouse or parents to the United States when compared to Canada. Again, their impressions seem to be based on anecdotal evidence since both the United States and Canada have reasonably comparable rules regarding visas

and immigration policies. Most important, Asian workers do not seem to be aware of the high cost of living in big American cities and quality of life issues. It would be helpful, therefore, if government and high tech industries make efforts to erase such erroneous impressions among Asian workers and apprise them of the factual situation in Canada and the United States. Asian workers could be informed about the significance of all that Canada offers and the importance of contributing for the privileges one enjoys here. Newly arrived IT workers could be provided better orientation to their rights and responsibilities as prospective citizens. Imaginative programs and policies that foster a sense of belonging to the communities in which they live might be a good strategy for retaining IT workers in Canada.

4. One of the most effective recruitment and retention strategies could be to enable Asian IT workers to bring their educated relatives from their homelands and develop their own kinship network in Canada. This appears to be a promising measure as it could provide compelling reasons for high tech workers to stay in Canada. However, extending this privilege just to IT workers is problematic and might potentially conflict with the overarching objectives of family visitor and immigration policies. High tech industries could consider offering their foreign workers an annual or biennial expense-paid trip to their country of origin.

5. Canadian governments at all levels could facilitate closer interaction and partnerships between educational institutions and the high tech sector. Also, they could consider investing more in technical education at both the high school and post-secondary levels and explore the possibility of subsidizing high tech education. Special attention to enlist women in high tech education and careers might help as well. They could be encouraged through a combination of financial incentives such as generous scholarships and aggressive awareness campaigns.

6. Smaller Canadian IT companies could pay special attention to providing general training to their workers in soft skills such as communication and managerial skills, team building and leadership skills, cultural sensitivity training and so on, in addition to the product-specific training that is provided on the job.

7. Due to the limitations of the small sample, one cannot definitively state that discrimination based on ethnicity is widespread, but as some of the respondents spoke about it, it is would be fair to conclude that there is, at least, a perception of discrimination among some Asian IT workers. A proactive approach by employers that emphasizes the acceptance of diversity, difference, and special needs might help to allay the apprehensions of visible minority workers.

8. Some workers, particularly those with graduate level qualifications and working in big companies, voiced concerns that the work atmosphere in their company was not challenging enough in that it did not fully use their advanced training and abilities. They also said that instead of acquiring smaller companies in order to gain access either to their technologies or their workers, their employers could use their talents and reward them well. It would, perhaps, be helpful if big IT companies could address the concerns of workers with advanced levels of training and consider their views before acquiring smaller companies.

9. This report is based on a small sample. It can only indicate areas for future research. A larger study and a more thorough analysis of what IT firms and governments in other countries have done to attract and retain workers could offer insights about ways of improving our policies.

Introduction

The rapid growth of the Information Technology (IT) industry globally has profoundly affected not only different societies but also conventional notions about the workplace and about employer/employee relations. One striking feature of the IT industry is that as it changes rapidly, continuously producing newer technologies, it also forces us to re-examine our perspectives on a variety of workplace issues. Thus, for instance, the IT sector has recast the very nature of work, where it is performed, how it is evaluated and recognized, and almost all the norms governing employer/employee relationships. In addition, the rapid expansion of the IT sector has also brought to the fore issues such as increased diversity in the workplace, gender equity of employment, and the role not only of compensation and training in retaining one's employees, but also of a range of emerging innovations in human resource management practices.

The most significant impact of the burgeoning IT sector is felt in the shortage of skilled technical personnel. This intense demand for IT professionals has affected most major industrialized countries and many in the developing world. In the former, there is a massive demand for knowledge workers while in the latter, there is a significant out-migration of highly skilled workers to attractive destinations abroad, mainly in the West. Such is the magnitude of this problem that even the United States – the world's biggest economy – has opened its doors to significantly large numbers of IT workers from abroad.

Similarly, other nations such as Japan, Germany, Australia, New Zealand, Israel, South Korea, and Singapore also have launched ambitious schemes for attracting high tech workers, mainly from India, China, and other countries of Asia. They have initiated aggressive recruitment campaigns in several Asian countries and are offering unprecedented incentives to IT workers to re-locate to their countries.

The high tech sector in Canada has also been affected by the shortage of IT employees. Professional bodies, such as the Software Human Resources Council, have estimated that Canada currently requires nearly 30,000 computer professionals. The report of the Expert Panel on Skills (1999) has pointed out that there is a scarcity of skilled workers in niche areas in the IT industry. Leaders of the IT sector and professional bodies too have voiced their concern, many arguing that the scarcity of technical talent is compromising the ability of Canadian IT companies to hold their own in a fiercely competitive, global, high tech market.

Given the international demand for knowledge workers, it is evident that the competition among countries to lure the best talents in the IT sector is intense. For a number of reasons, the US is well-positioned to emerge on top in this competition. Because of the strength of its economy and the dynamism of Silicon Valley, the United States is the preferred destination of IT workers from different parts of the world. Anecdotal evidence suggests that those who cannot make it to the United States for different reasons, such as difficulty in obtaining a visa or lack of adequate work experience, choose to go to other countries like Canada, countries in Western Europe, Australia, and Japan.

The competition to lure IT workers has in fact become so intense of late that, in spite of its pre-eminent position, even the United States has to constantly find new ways of ensuring that the flow of IT workers does not abate. Other countries too have been forced to develop imaginative schemes for attracting IT workers and for keeping them in their countries. This contest has forced both governments and IT industries to seriously rethink their strategies for recruiting and retaining highly skilled workers. The greater mobility of IT workers, in comparison to that of workers in other industries, has also increased the pressure to implement alluring recruitment and retention strategies.

In the case of Canada, issues of recruitment and retention have acquired greater salience because not only is the demand for highly skilled workers very high, but there is growing concern that significant numbers of Canadian workers may be migrating to other countries, mainly to the United States. The extent and repercussions of this possible "brain drain" have been the subject of serious debate. The findings of this project suggests that Canada faces other challenges as well, particularly with respect to its ability to compete for skilled workers from Asia. As noted later in this report, interviews with a sample of such workers shows that prominent among those challenges are the lower value of the Canadian dollar, the absence of an internationally recognized, dynamic hub like Silicon Valley, and for some, even considerations around climate.

To offset such drawbacks, the Canadian government and the IT industries here have implemented a series of measures, all designed to meet the shortage of IT professionals. One prominent initiative is the Software Development Worker Pilot Project which was put in place in May, 1997. Under this pilot, the Canadian government has expedited the process for authorizing work visas to allow foreign IT professionals to work in Canada on a temporary basis. In consultation with the Software Human Resources Council, the federal government identified seven software occupations that face particularly severe shortages of workers. To meet the demand for IT workers in these occupations, the government replaced the validation procedure conducted by HRDC on a case-by-case basis with a National Validation Letter. This letter authorizes immigration officials in embassies abroad to expedite the process of issuing temporary work permits to workers with valid Canadian job offers in those seven occupations. The main goal was to enable high tech companies to bring in foreign workers quickly and easily.

For their part, Canadian IT industries have also revamped their HR practices, enriching the compensation packages for IT workers, providing stock options, and offering a wide range of other incentives, all intended to attract and retain high tech workers. To a considerable extent, the initiatives of the government and the IT sector have yielded positive results. Though competition for such workers still remains fierce, it is likely that the situation would have been much worse without the new and imaginative policies of both the government and the industry.

Yet, anecdotal evidence suggests that though Canadian companies succeed in attracting foreign workers, a large number of them quit their jobs after working for a couple of years, and move, often to the United States. It has been observed that the majority of those likely to migrate have been Asian computer professionals. This suggests that a number of Asian IT workers may regard Canada as a transit point in their journey to the United States. Canada not only offers them a

good starting point, but also world-class training and initiation into the ways of the North American high tech sector.

The propensity of Asian computer professionals to migrate to the United States, perhaps after receiving advanced training in Canadian companies, and in several instances, higher education here, has serious implications not only for the IT sector but also for the labour market and the Canadian economy. One set of explanations often used by those who argue that there is a "brain drain" among workers in this industry is that they go to the United States primarily for higher salaries, lower tax rates, and better opportunities. Though these factors may play a role, this argument does not adequately account for the complex motivations of workers. It does not, for instance, consider whether their experiences at the Canadian workplace have any influence on their decision to leave Canada. It also ignores crucial issues such as the challenges of the work they do, the type of training to which they have access, the recognition they receive for their contributions, and the extent to which the general work atmosphere motivates them. Other important issues are of particular relevance to IT workers who have come to Canada from abroad: do foreign workers feel a sense of community here? Might rules regarding family class visitor and immigration policies have anything to do with their sense of isolation, if that is how they feel? Do they go to big cities in the United States because they are likely to be able to interact with people of similar background?

Decisions pertaining to work and migration are mediated by myriad factors, many of which are inter-related. In order to be able to design effective rules regarding immigration and employment of workers who are recruited in a global labour market, it is important that governments and employers understand the factors that affect workers' decisions: first, to come to Canada; and second, to remain in a long-term relationship with an employer here. Failure to design such policies well could mean that Canada will possibly serve as a transit point in the global movement of IT workers to the United States.

Despite the importance of these issues, very little research has been done on the motivations, attitudes, perceptions, and intentions of Asian computer professionals working in Canada. We also do not have data on the proportion of Asian-born workers in the IT sector. All the IT companies who were interviewed said that they do not maintain statistics about their workers on the basis of their ethnic background. They also did not have information about the exact number of foreign workers in their firms. This study was designed to address some of these gaps by investigating the career-related experiences and quality-of-work-life issues of computer professionals in general and Asian computer professionals in particular.

Within this overarching framework, the main objectives of this study are as follows:

a. To investigate the motivations, aspirations, and expectations of Asian IT professionals working in Canada and their experiences of the Canadian high tech environment. The research seeks to probe the strengths and weaknesses of the high tech workplace, as seen through the eyes of different segments of the IT workforce.

b. To examine the adequacy of the strategies adopted by Canadian IT industries to deal with an apparent shortage of skilled professionals, and particularly, their attempts to make their work environment attractive to computer professionals. Also, to understand the high tech sector's experiences with, and perceptions of, Asian IT workers.

c. To identify factors that affect the decision of the IT workers to either stay in Canada or to go elsewhere, often to the United States.

d. To provide insights for policy and program design in the areas of high tech recruitment and retention.

We have focused on Asian IT professionals for the following reasons:

First, as stated earlier, anecdotal evidence and subsequent interviews with some HR professionals point to a higher incidence of migration among Asian professionals. This is not to suggest that Canadian-born IT workers do not go the US or elsewhere; in fact, they too migrate. However, there is a sense that there may be a greater tendency among Asian workers to move to the US. This is one of the issues that the interviews were designed to address.

Second, a review of the literature reveals that most studies of the IT sector have focused on questions concerning "brain-drain" in general terms. There appears to be no study so far that probes the workplace-related experiences and motivations of foreign IT professionals. In fact, relatively little is known about the workplace experiences of workers in the sector more generally. This study is an attempt to address this gap in our knowledge.

Third, the focus on Asian IT workers was driven by financial considerations and sample identification issues. Research costs were kept within manageable limits by adopting the snowball technique to interview Asian IT professionals.

Three caveats are in order at this point. First, considering the small sample size of this study, its findings can be, at best, only suggestive of broader trends. Second, the intense competition for IT workers has made employees and employers alike extremely wary to share sensitive information, given the high level of activity of "head-hunters and body-shoppers" in the sector – for example, company representatives were reluctant to provide exact figures regarding the number of workers who quit the company in the past year. Interviewees nonetheless tended to be generally open in their remarks and provided valuable insights into a range of issues that confronts this sector.

Third, the IT sector is huge and comprises firms that specialize in several different areas. Similarly, IT workers also specialize in niche areas. The demand for different types of specializations and the compensation provided to them varies to a certain extent. Since this project is based on a small sample size, it is not fully representative of the entire IT sector. In this study, a majority of the IT workers interviewed were software designers. Only a handful of them were specialists in computer hardware and some were working as consultants for a big IT consulting company in Ottawa. Throughout this report, expressions like IT workers, computer professionals, knowledge workers have been used interchangeably. This is because the focus of

this study was on IT workers whose skill sets are in demand and who are likely to get opportunities to work elsewhere.

Gaps in the Research Literature

As we stated earlier, the primary focus of this study is on Asian IT professionals' workplace-related experiences, and how these impact issues of recruitment and retention in Canada. Before presenting a summary of the literature, we wish to point out three things. First, except for some articles and reports in the popular media, there does not appear to be any significant study specifically on the work and life experiences of Asian IT professionals in Canada. Second, much of the work on the IT sector is focused at the macro level of analysis. For example, the question of brain drain in Canada has been treated chiefly from a macro perspective with emphasis on quantitative and statistical data. In other words, there does not seem to be much literature that looks at the work experiences of Asian professionals at a micro (individual) level. Third, since IT has a global market, and since knowledge workers tend to move often in search of better career opportunities, it would be useful to study the behavior, aspirations, expectations, and motivations of IT professionals from different regions.

The chief endeavour of this study, which is based on detailed, face-to-face interviews with IT workers and HR professionals, is to put a "human face" to the issues confronting Asian IT professionals. Stated differently, it attempts to capture the subtle human elements mediating the experiences of migrant IT workers from Asia. In the current literature, since no other study seems to have addressed these issues or adopted a qualitative approach to them, this paper tries to fill a significant gap in our knowledge of the IT sector. Having noted this, it must be pointed out that the existing writings on the IT sector, such as those that attempt a macro-level analysis, provide essential background for this study. As such, we will briefly examine the main issues that have been discussed in the literature.

Of all the changes the IT revolution has produced, the migration of skilled IT professionals has only recently begun to receive scholarly attention. In one sense, the renewed interest in the phenomenon of brain-drain is understandable. Prior to the advent of the Internet and computer-based technologies, the migration of skilled professionals was mainly restricted to scientists, academics, medical specialists, and technologists. Since the late 1980s, the movement of knowledge workers has steadily increased. This movement, chiefly from the developing countries to industrialized nations of the West, has had serious consequences for both sets of countries. Here in Canada, the migration of IT workers south of the border has only served to heighten concerns about the broader question of the loss of skilled talent to the United States.

The new thinking on the migration of skilled IT professionals constitutes a radical departure from received wisdom on this issue. Instead of viewing it as "brain drain," or a loss, some scholars have argued that it must be seen as the "international exchange of human resources." Thus, Cao (1996) does not consider the migration of IT workers as brain drain, but as "brain circulation." He argues that it "appears to be an inevitable result of, and a necessary contributor to, the process of globalization" (1996:269). According to Cao, though less-developed countries lose precious human resources in the short-run, they should encourage the "circulation of brains" for

stimulating national development and for accelerating the pace of globalization.

Like Cao, Cheng and Yang (1998) also maintain that the earlier theories of brain drain do not adequately explain the phenomenon. The traditional "pull/push framework" posited that unfavourable circumstances "pushed" highly trained professionals from their homelands and favourable conditions pulled them to advanced nations. Similarly, in the 1970s, dependency theorists pursued this argument further and sought to explain brain drain by pointing to the uneven nature of development at the international level. Cheng and Yang maintain that though useful, these theories "fall short of providing solid evidence for understanding cross-country differences in the migration of professional, trained, and kindred (PTK) workers on a world wide scale" (1998:629). They locate the migration of skilled workers within the "global integration process" which includes both global interaction and global inequality. Their main thesis is that "economic and educational interactions between sending and receiving countries are important driving forces of professional migration" (1998:649). Furthermore, Cheng and Yang extend the cross-national disparities argument and include additional dimensions of uneven development such as differences in children's educational opportunities, political conditions, and differences in professional employment opportunities (ibid.).

Gaillard and Gaillard (1997) also discuss the question of whether the international mobility of brains amounts to an "exodus or circulation." In their view, brain drain will continue to affect a large number of countries and is likely to nullify the benefits of globalization. They discuss two options to deal with this problem: the return and Diaspora options, as they call them (1997:219). Analyzing the case of South Korea, Gaillard and Gaillard point out that though the Korean government offered incentives to foreign-educated Korean scientists and engineers to return in the 1960s, Korean professionals started coming back only in the 1980s when the Korean economy and national research network had developed considerably. Thus, a certain advanced level of development is a pre-condition for the "return" option.

Unlike the return option, the Diaspora option involves linking scientists and professionals living abroad with the national scientific community so that the professional expertise of the former becomes available to the latter in their countries and fosters the development of science and technology. However, Gaillard and Gaillard point out by analyzing the Caldas network (Columbian Network of Scientists and Engineers Abroad) that this option has its drawbacks. They maintain that the "increasing denationalization and privatization of scientific and technological activities" have adversely affected the "professional values and models," particularly those pertaining to "collaboration and exchange of information" (1997:220). Regardless of the obstacles, Gaillard and Gaillard maintain that the return and Diaspora options are interdependent and they offset the negative consequences of brain drain, if pursued simultaneously.

Iredale (1999) disputes the argument that the migration of skilled workers contributes to global development. She analyzes the problem from the perspectives of both the sending and receiving countries and notes that brain drain is detrimental to both countries. Nations that suffer from the loss of talent have to devise "protective or preventive measures to stem skilled emigration" (1999:89). Besides, they have to find ways of encouraging professionals to return. Similarly, countries that receive foreign professionals also face problems such as how to protect domestic

jobs for their own citizens, how much immigration should be allowed and the like. Thus, considering that brain drain is a sort of a double edged sword, Iredale argues that "countries have obligations and responsibilities towards each other which need to be taken seriously" (ibid., 90).

Other scholars take the perspective of countries that are most seriously affected by the emigration of skilled professionals, examining the factors facilitating brain drain and its impact on these economies. Khadria (1991) and Oommen (1989) have discussed the causes and consequences of brain drain in India. Zweig (1997) has analyzed brain drain in China. His main concern was to find out what factors influenced the decision of Chinese professionals in the United States to return or not return to China. His study is based on interviews with 273 Chinese students, scholars, and professionals in the United States. Zweig argues that the key variables for returning to China or remaining in the United States include the respondent's age, sex, and social background in China. In addition, Chinese professionals in the US were worried about "political instability, lack of political freedom, and a lack of trust that the government would let people who returned leave again" (Zweig, 1997:92). They were also concerned about their professional and career prospects in China.

Chang (1992) has critically examined the causes of brain drain in Taiwan. Her thesis is that Taiwanese brain drain is chiefly restricted to an outflow of college graduates who go to the United States to study. She argues that since it involves scientists and professional engineers, the extent of brain drain is quite serious. Besides, though a large number of students emigrate to the United States, an even larger number stay put in Taiwan. Chang also points out that since Taiwan lacks the infrastructure and facilities for advanced training in the sciences and engineering, sending students to the United States is a positive development. It provides crucial human resources for national development. Furthermore, the migration of students strengthens economic bonds between Taiwan and the United States, which is its largest market.

The recent literature on brain drain in Canada revolves mainly around the question of whether there is brain drain in the IT sector and, if so, does it adversely impact the Canadian economy. Opinions on these questions are sharply polarized. On the one hand, scholars like DeVoretz (1999), DeVoretz and Laryea (1998), and Iqbal (1999) argue that the current migration of high tech workers and other professionals is escalating and that it impoverishes the Canadian economy by billions of dollars. On the other, Fellegi (1997), Helliwell (1999), and Kesselman (1999) posit that claims about brain drain are not based on hard data or are supported only by "fragmentary statistical data". Fellegi's (1997) thesis is that though some high tech workers have moved to the United States, their number is offset by the number of highly qualified professionals migrating into Canada (ibid.). DeVoretz (1999) disputes Fellegi's concept of "brain gain" by pointing out that while incoming immigrants are skilled, they are not as productive as those that migrate. Besides, their resettlement costs a great deal in terms of time and resources.

Because of differing perceptions, there is no consensus on the issue of policy responses. According to Iqbal (1999), the difference in earnings between Canada and the United States, and the difference in the rate of taxation between the two countries are primarily responsible for the brain drain to the United States. Hence, he argues that reducing tax levels in Canada would arrest the migration to a considerable extent. DeVoretz too advocates new policies, such as offering tax breaks and increasing "the quality of immigrant replacements" would reduce the outflow of professionals to the United States (1999:24). The mass media have also carried cover stories demanding reduction in taxes and other incentives to retain workers and to ensure that those who have gone to the United States will return (*Macleans*, Jan. 24, 2000; April 12, 1999; Jan. 18 1999). Understandably, scholars like Helliwell, who do not consider the brain drain a major problem, do not see any need for "an exaggerated policy response" (1999:6).

Aside from the question of brain drain, the role of gender in the high tech workplace has received some scholarly attention. Ranson and Reeves (1996) examine gender discrimination in earnings and promotions in the high tech workplace using a sample of 451 computer professionals in a Canadian city. Their research revealed that women computer professionals often do less well than male IT workers in two areas: income and job status. They attribute this discrepancy to differences in work experience and also because of "strategies of recruitment aimed at limiting women's access to positions of authority" (1996:168).

Though the Canadian literature is rich in certain areas, such as the incidence and consequences of brain drain, it has limited utility for this study for two reasons. First, the literature discusses brain drain in general, aggregate terms and does not look at particular sections within the high tech workforce that are more prone to migrate. As a result, although the overall figures of migration might be low, or offset by the inflow of skilled immigrants, by ignoring the incidence of migration in particular sections of the IT workforce, the literature seems to diminish the magnitude of the migration of IT professionals, particularly among those who came from Asia. Second, as we mentioned at the beginning, the literature does not address workplace related issues at any significant length. Moreover, there is virtually no literature on the work experiences of Asian computer professionals. This study is a modest attempt to fill this gap in our current knowledge about Asian IT workers.

Research Methodology

This study is qualitative in nature. It is based on detailed structured interviews with 55 IT professionals and 8 human-resource professionals of high tech companies based in Ottawa. Apart from the interview itself, the IT workers were asked to complete a questionnaire that was designed to provide a demographic profile. The 55 IT professionals were selected through a purposive sample using a snowball technique. They comprise the following four categories:

1. Temporary IT workers from Asia who came under the Software Development Worker Pilot Project.

2. Highly skilled IT professionals from Asia who came to Canada through regular immigration channels.

3. Asian (foreign) graduate students who joined the high tech sector in Canada after their graduation from Canadian universities.

4. Canadian-born IT workers.

One of the major challenges we faced in this project was gaining access to high tech professionals and securing their agreement to participate in the interviews. Many were reluctant to spare about 90 minutes of their time for a detailed interview; many prospective interviewees turned down our request for interviews stating that they could use their time more profitably at work.

Another complicating factor is that both employers and employees in the high tech sector are wary of head-hunting agencies and talent scouts who try to lure workers in the industry to companies in the United States and elsewhere, promising better prospects and compensation packages. Understandably, employers frown upon such contacts and ask their workers to stay away from them. There is, thus, an atmosphere of tension in the high tech sector and a general tendency to view with suspicion anyone trying to gain access to IT workers. A critical first step therefore consisted of establishing the legitimacy of the project and of the researchers.

There is no ready-to-use database on Asian computer professionals in Canada that covers all categories of workers. As a result, the sample of interviewees was constructed using a "snowball technique" wherein individuals who agreed to participate were asked to provide the names and contact information for colleagues in the industry who were then contacted. Efforts were made to ensure that the selected interviewees fell within the four categories of workers listed above, though the sample is by no means representative of employment in the industry as a whole. Given the relatively small number of interviews, the findings here can be regarded only as indicative of broader trends. However, they do provide a closer look at human resource practices of employers, and attitudes and perceptions of employees in the industry than has previously been available.

We were able to gain access to IT workers mainly through three sources: personal contacts; references provided by officials from embassies and high commissions of the major Asian countries; and references provided by HR professionals of some high tech companies who participated in the interviews. The interviews were conducted during the period March through August, 2000

Both the employees and the employers were drawn from Ottawa-based IT companies. In each case, we sent a letter of introduction and a detailed description of the project (including the objectives and research methods) to the prospective interviewees. They were also assured that neither their names nor their company's identities would be revealed anywhere. Furthermore, we gave them the option to withdraw their remarks even after having recorded them, if they had some misgivings. Thus after obtaining their informed consent, we recorded the interviews. A similar procedure was followed in the case of the HR professionals. After the interview, the

subjects were requested to fill out a survey questionnaire regarding their socio-economic, technical, and professional background. (The Interview Guide and Survey Questionnaire are included as Appendix A and Appendix B respectively.)

By adopting the structured interview format, we were able to ask several supplementary questions while not deviating from the main issues. All in all, the interviews yielded a wealth of information and insights.

A Note on the Sample for the Interviews

In drawing the sample for the interviews, an attempt has been made to include IT workers belonging to different categories, including Canadian-born professionals. Still, the sample is not representative of the IT workforce. However, the basic purpose was not so much to work with a representative sample, but to probe issues concerning Asian IT professionals about which not much is known. A related factor is that the size of the sample was driven by time and resource constraints.

Canadian-born workers were included so that the possible differences in the perceptions of Canadian and non-Canadian IT professionals regarding their workplace and career prospects could be explored.

Out of the 55 high tech workers interviewed, there are only four female workers. All of them came to Canada from Asia. Unfortunately, it was not possible to get more female workers to participate in this study. A majority of the IT workers were software designers. Only a handful of them were specialists in computer hardware and some were working as consultants for a big IT consulting company in Ottawa.

To understand the employers' perspective, HR professionals of eight high tech companies were interviewed. Of these, three were big companies employing over 2,000 workers each, much more in two cases. Then, there were two companies that employed around 500 workers each. The remaining three were smaller companies that employed between 100 and 150 workers. Of these companies, two were multinational companies not owned by Canadians. The rest were Canadian companies. In terms of their products, broadly speaking, six companies are involved in producing software while one company is a consulting firm and one other is involved in producing computer hardware.

A Profile of the Interviewees

Interview details

Total number of interviews conducted	63
Number of high tech professionals interviewed	55
Number of companies interviewed*	8
Temporary IT professionals who came under the fast track pilot project (temporary workers)	13
Skilled IT professionals who immigrated to Canada (permanent residents)	21
Foreign graduate students who joined the IT workforce after graduation (graduates with employment authorizations)	13
Canadian born IT professionals	8

(* HR professionals of high tech companies were requested to articulate their company's policies, not their personal views.)

Aggregate profile of the IT professionals (N = 55)

Average age of the interviewees	32 years
Number of years in the current job	2.56 years
Total years of experience in the field of Information Technology	5.62 years
Average estimated salary of the IT professionals*	$81,390
Interviewees holding doctoral degree	5.45%
Interviewees with masters degree	50.90%
Interviewees with bachelor's degree	41.82%
Interviewees with a diploma in IT or related area	1.82%

(*salary excludes income from stock options, overtime pay, awards, incentives, and other monetary perks.)

The Employers' Perspective

The objectives of conducting interviews with HR professionals of high tech companies were as follows:

1. To understand their perception of the shortage of skilled technical personnel in the high tech sector and the best strategies, in their view, that companies and the government could adopt to deal with this problem.

2. To get a first-hand account of the recruitment and retention strategies they have adopted to attract IT workers.

3. To know their views on the performance and problems of Asian computer professionals.

4. To learn more about how they are dealing with new challenges at the high tech workplace, such as cultural diversity, the under-representation of female workers, and the demands of the IT professionals.

The interviews elicited nearly identical responses, although degrees of emphasis varied. Likewise, the nature and magnitude of their problems differed, depending on the size of the company. One common point that all HR professionals articulated was that there is a serious shortage of skilled technical professionals and that they experience significant problems in hiring the most suited and well-qualified professionals.

All big companies (i.e., those employing more than 500 people) have faced intense competition from huge American companies for the best and most qualified professionals. HR personnel emphasized that in recent years American companies have started "raiding" Canadian university campuses to recruit the best students. For instance, until about five years ago, the University of Waterloo, well-regarded for its science and technology programs, provided fresh recruits to Canadian companies. But now, HR professionals noted, the "dominance" of American companies is so well entrenched that several Canadian companies have had little success in recruiting students graduating from the University of Waterloo. This situation obtains in almost all Canadian universities that have reputable engineering programs. Aside from being frustrated about their limited ability to recruit Canadian students, all HR professionals expressed concern that quality Canadian talent was being enticed to the United States. Their greatest worry was that Canadian companies were not getting the best people to work for them due to competition from the United States.

HR professionals attribute the dominance of American companies to several factors. They pointed out that although American companies provide the same salary in terms of dollar figures, the difference in the exchange rate meant that people going to the United States would automatically earn about 45% more than their Canadian counterparts. But the real attraction, according to HR professionals, are the generous stock options that American companies offer. Apparently, the competition for talent is so intense that even fresh graduates are being offered stock options as part of their job offers. In addition, all the American companies provide generous benefits and incentives, many of which extend beyond standard items like medical and dental coverage, drug plan, and relocation expenses. To lure the best talents, American companies have designed imaginative schemes. HR professionals mentioned that several American companies provide a free BMW car for one year to their new employees. Others give laptops, free tickets for two to exotic destinations with all expenses paid, special care for pets during absence on official trips, generous hospitality accounts, and help in finding work for spouses.

In addition to providing such fringe benefits, HR professionals pointed out, American companies succeed in attracting Canadian graduates through "aggressive" publicity campaigns at career fairs, trade shows, professional meetings, and academic conferences. Some have adopted a two-pronged approach. First, they have their current employees, mostly recent hires, talk to prospective recruits about their experiences at the company, the excellent benefits and incentive

packages they get, their career prospects, and the exciting nature of their work. Second, after making an offer to Canadian graduates, American technical recruiters literally work out the tax implications of their earnings, including those from their stock options, in both Canada and the United States. The HR professionals said that they cannot win against this strategy as the actual figures always work out in favour of the United States, given their lower tax rates. This technique of convincing potential employees, through concrete evidence, that they will have more after-tax dollars in their pockets if they opt for the United States, apparently, is almost always a clinching factor.

Furthermore, American companies, particularly those based in Silicon Valley, always highlight the fact that by relocating to the United States, employees will be in a "happening place," a dynamic atmosphere that offers myriad opportunities for growth and better prospects. They also accentuate the fact that in California, Texas and elsewhere, employees can enjoy good weather throughout the year.

From the interviews with HR professionals, it was evident that they were unhappy that there was no level playing field between them and their American counterparts. All of them pointed out that they operated in an environment of "unfair competition," one in which the odds were heavily stacked against them. They posited that even if Canadian companies try to match the benefits that the Americans offer, they cannot do much about certain other factors. Chief among them are the differential exchange rate, and the combination of stock options, lower taxes, and greater career opportunities – and the Canadian weather is, of course, something that does not lend itself to easy manipulation.

Interestingly, smaller Canadian companies, particularly those that have gone past the pre-IPO stage, also complained about their difficulties in attracting and retaining high tech workers. But, as one HR professional explained, their employees often go to big Canadian companies more than to American companies. Moreover, she pointed out that just as in the case of the American companies, bigger Canadian companies can afford to offer much more – in terms of salary, benefits, training and benefits – to their employees than smaller ones.

On the question of skills shortage, two other themes emerged from the interviews. First, four of the eight HR professionals, being convinced that Canadian companies were being short-changed in their own country, argued that the federal government should make the American companies, particularly the global-level players, compensate for the loss of Canadian talent. Their position was that since the graduates were trained at the expense of Canadian taxpayers, the latter should be reimbursed the expenses involved. Whether or not this is a feasible proposition, particularly in the light of NAFTA, it provides some insight regarding the views of Canadian companies. Besides, one could also argue that Canada should compensate the countries from which immigrants arrive.

The second point concerns the actual impact of the shortage of skilled workers on productivity and revenues. All but three HR professionals we spoke to said that they did not have the data to confirm whether revenues and productivity had suffered and, if so, to what extent, because they do not deal with those issues. Three professionals, all belonging to large companies, affirmed that they were affected in terms of their deliverables and revenues, though they too did not have

any concrete figures. All HR professionals underscored the fact that they were constantly under pressure from their managers and technical staff to provide more hands to work on projects. The interviews, therefore, clearly point to the fact that Canadian companies are being affected by a shortage of skilled workers and that it is likely affecting their productivity and revenues.

Factors influencing the decision of IT workers to migrate to the United States or elsewhere

All HR professionals were unanimous in their opinion that IT workers who were single, or married with no children, or those with young families, were most likely to think of migrating to the United States. The more established workers who had extended families here or immigrants who had lived here for a decade or two were unlikely to move. Another crucial factor, they pointed out, was having family connections either here or in the United States. HR professionals observed that, in their experience, IT workers (particularly those from Asia) who had siblings, parents or relatives in the United States, were more likely to join them there. Similarly, those who had family in Canada were likely to remain here.

Other factors that apparently influence the decision of IT workers to move include their perception of a higher level of compensation, lower taxes, the lure of saving money in a stronger currency (i.e., US dollars), greater opportunities for career development, and better exposure to cutting-edge technology.

Short-term strategies for dealing with the shortage of IT workers

On the question of the most efficient short- and long-term strategies for dealing with the skills shortage, there were several common themes in the suggestions that HR professionals offered, based mainly on the exit interviews they conducted with departing workers. Some talked about the short- and long-term initiatives that they had launched on their own to mitigate the problem. Others called for immediate intervention from the government. HR professionals of all big high tech companies mentioned that they have instituted generous employee referral programs. Under this scheme, if a current employee introduces an experienced IT worker to his/her company and, if the person is hired, the referring employee gets $3,000 to $5,000 as an award, depending on the level at which (s)he is hired. Lately, to make this program more attractive, high tech companies are offering this amount as a net incentive, i.e., they pay the tax on these awards.

Broadly speaking, in the short-term, HR professionals feel that some measures could be initiated almost immediately as they are not likely to have too many adverse consequences. All of them felt that the government could reduce taxes, particularly the tax rate on stock options and capital gains. They repeatedly emphasized that the contrast with the United States was too stark for IT workers to ignore and so they could never convince their employees that they were getting a better deal here. Based on the exit interviews, another point HR professionals mentioned was that all employees who quit their jobs stated that compensation and taxes were the two major reasons why they wanted to leave.

On a related note, one HR professional suggested that the Toronto Stock Exchange could relax its regulations regarding stock option pools and the rules governing their issuance. She felt that the current rules were "too rigid" and that they prevented companies from competing with their

American counterparts regarding granting options. Another HR professional of a big high tech company also argued in favourof being allowed to grant more options.

It is interesting to note that both HR professionals and IT workers share the somewhat exaggerated perception that the tax "burden" in Canada is very heavy when compared to the United States and that the compensation offered by American companies would provide more disposable income to IT workers. While it is true that the level of taxation in Canada is higher than in the United States, the misperception is regarding the extent and degree of difference in tax levels. Though some HR professionals did mention the high cost of living in Silicon Valley, most of them seemed to believe that the high costs were offset by the generous compensation. Evidently, the policy implication here is that both HR professionals and IT workers need to be informed about the comparative tax rates in the United States and Canada, and about the significant cost of living in most big cities in the US.

HR professionals reported that a central concern of Asian IT professionals was that the immigration rules in Canada did not facilitate bringing their immediate families from their homelands, particularly their parents. In several instances, even bringing them on a visitor's visa was not allowed. It was observed that this inability to be united with immediate family has led several Asian IT workers to think of moving to the United States because, it was argued, it is easier to get one's parents there. Hence, HR professionals argued that the government should streamline immigration laws immediately and ensure that not only IT workers but their immediate families, particularly their parents, are allowed to visit and stay in Canada.

Again, this is another instance where HR professionals subscribe to a common misperception of the workers regarding immigration procedures. From a policy point of view, it seems important to publicize among both HR professionals and workers the following facts:

1. Generally speaking, rules pertaining to a visitor's visa in both Canada and the United States are comparable. More or less the same set of criteria determines who gets the visa.

2. Sometimes delays and problems arise when temporary workers or graduate students on work permits try to bring their parents or family members to Canada. It must be pointed out that, in both cases, immigration officials have legitimate concerns about whether the person sponsoring the visitor has the ability to take care of the latter's needs in Canada. In the case of the family members of permanent residents, immigration officials are also keen to ensure that they do not /will not potentially apply for immigration after coming to Canada, instead of doing so in their home countries, which is the proper procedure. More or less similar concerns guide the decisions of the Immigration and Naturalization Service in the United States. Hence, it is not factually correct that getting an American visa is easier or quicker than getting a Canadian visa.

A novel strategy that several IT companies are pursuing to hire IT workers involves working closely with universities abroad. Three of the eight HR professionals we spoke to indicated that they have established ties with selected universities abroad and hire their graduates. Under this arrangement, high tech companies here specify clearly the skills and knowledge base that they require for hiring their graduates and the universities tailor their courses to meet the specific

needs of the IT industry. This facilitates the smooth transition of foreign graduates into the Canadian workplace. HR professionals averred that this agreement with universities abroad is working well and is one of their major avenues for recruitment.

It is true that many foreign workers who come from universities abroad eventually go to the United States. But, as one HR professional said: "Canadian grads know more about American companies and have direct offers from them, unlike those who graduate from universities abroad. Hence it is easy for us to get foreign graduates to work for us."

Because getting foreign graduates is, at best, an ad hoc arrangement, some Canadian high tech companies, particularly the big ones, have established R and D units in countries where IT workers are plentifully available. Thus several companies have set up their base at Bangalore in India, a city that is often referred to as the Silicon Valley of India.

Outsourcing some parts of the work and signing mutually beneficial agreements with high tech companies in developing countries are the other preferred methods, according to some HR professionals. They mentioned that their companies have entered into agreements with high tech companies in India, China and elsewhere under which workers from these countries come to Canada on short-term assignments. Ideally, the workers are supposed to receive training and exposure while working on Canadian projects and then go back to their parent organizations, but in reality, most of them stay and take up regular, full-time work in Canada. As they are trained in Canada, they blend in with the Canadian workforce. A couple of HR professionals stated that they always identify good workers willing to stay in Canada and help them get the required papers to work here.

Unfortunately, smaller IT companies, given the constraints of their size, scale of operation, and resources, cannot always pursue the strategies adopted by bigger companies. One HR professional working at a small company that employs about a hundred workers emphasized that being small, her company's options were limited. They obviously could not compete with the bigger companies in the areas of compensation, stock options and extra benefits. So, the HR professional explained, the smaller companies adopt a slightly different approach. They try to provide the benefits that bigger companies do not offer. Chief among them are increasing the length of vacations, providing a good balance between work and family life, and providing a supportive and congenial work environment. Thus several smaller companies allow their workers to go on extended leave, allot them more spacious cubicles, and involve them in team-building outdoor activities. Besides, of course, the HR professional stressed that they always ensure that the employees work on interesting and challenging assignments. In addition, smaller companies take extra measures to help their foreign workers or new immigrants to get settled into the company and in Canadian society. She explained that her company offers free ESL training to those who need it. Furthermore, it provides guidance and help to new Canadians/immigrants/ foreign workers to deal with Canadian rules and regulations. For instance, in one case, the company offered some help to a Chinese worker to get his driver's license.

Another strategy that small companies adopt relates to providing summer jobs to undergraduates in science and engineering for four consecutive spring/summer terms. The HR professional at

the small company said that by introducing students to the company's work atmosphere and culture early on, they hoped that at least some of them would join the company after graduation.

In addition to the steps outlined above, almost all high tech companies try a variety of strategies to retain and attract IT professionals. These include providing free relocation counseling to the employee and his/her family; finding work for the spouse in the company, if possible; and fast-tracking high-performing employees. All HR professionals stressed, however, that these measures were effective only in the short-term and that more well-conceived and planned strategies were required to deal with this problem in the long run.

Long-term strategies for dealing with the shortage of IT workers

In the long-term, all HR professionals we interviewed said that the industry, government, and educational institutions must work together and formulate joint strategies to deal with the paucity of skilled workers. On their own, most big high tech companies have initiated several measures. Six out of eight HR professionals working for big companies mentioned that they were working with schools and colleges to graduate more technically qualified students. They have started a number of short and long-term programs at schools, colleges, and universities. Apparently, one of them is a two to four-week training program for engineering graduates, popularly known as the Bridge Camp. More elaborate re-skilling programs, offered in partnership with universities such as Queen's University and the Royal Military College in Kingston, involve eight months of school and eight months of co-op terms.

The Canadian branch of a top American telecommunication company has instituted training programs at both the high school and university levels. Its HR officer told us that the company has devised a full-fledged syllabus covering the main areas of its research and technology, trained teachers at the high school level, and through them introduced telecommunication-related issues to students. The idea is to interest the students in high tech-related areas well before they make up their minds about their careers. A similar program is being offered to undergraduates in several universities. To complement the classroom training, this company also offers summer work terms to high school and university students who undergo its training program. Recently, to attract more co-ops, it offered stock options to a co-op student. Furthermore, this company has devised the entire syllabus for a Masters program in telecommunications and provided funding to Dalhousie University to offer the program. It has also instituted Chairs in universities in the areas of Electrical Engineering and Computing Science.

It is interesting to note that regardless of their size and scale of operation, all high tech companies that were interviewed are involved in promoting high tech-related education in one way or the other. Smaller companies have restricted their role to providing scholarships and work terms. Bigger companies with more resources have created whole new programs to suit their needs. The IT industry has also entered into partnership with universities in Ottawa in collaboration with the Ottawa-Carleton Research Institute (OCRI) and started a 16-month retraining program for immigrants, refugees, and new Canadians who have core competencies but lack skills in computing. Such individuals are offered classroom training in different areas of computing for eight months. Thereafter, the member IT companies absorb them in their workplace and provide

them on-the-job training. Students who perform well are usually recruited on a permanent basis. This program has provided several new high tech workers in the Ottawa area.

In some instances, OCRI also provides language skills (ESL programs) and deals with credential equivalency issues – all to facilitate the entry of immigrants and new Canadians in the high tech workforce.

All told, the HR professionals we interviewed were of the opinion that the government could adopt a holistic, multi-pronged approach to the problem of skills shortage. Emphasizing some solutions to the exclusion of others, they felt, would be ineffective. One HR professional argued that to encourage students to pursue technical education, the government could, perhaps, explore the possibility of fully subsidizing their university education. If they don't have to bear the burden of student loans, she felt, more students would prefer to graduate with an engineering degree.

HR professionals' perceptions of Asian IT workers

All the HR professionals we interviewed spoke highly about the technical competence and work ethic of Asian IT workers. In three instances, they mentioned that, though technically sound, some Asian IT workers have problems communicating in English. They also said that to improve their communication skills, Asian workers were being offered ESL courses, free of charge.

All high tech companies that were interviewed are now quite sensitive to the special requirements of Asian IT workers and to diversity-related issues. Thus, as HR professionals of big companies pointed out, all major high tech companies provide a prayer room for their Muslim workers who wish to offer prayers during afternoons. Apparently, this gesture has been well-received and several Muslim workers take a quick break from work during afternoons, assemble in the prayer room, and offer prayers in a group.

Another initiative pertains to starting courses in diversity and harassment issues. HR professionals stated that in almost all IT companies, diversity and harassment courses are mandatory for managers and those above them. These courses acquaint the trainees with issues of diversity management, dealing with cultural differences, culturally rooted notions of space, privacy, communication, and cultural taboos. Since work in the high tech sector involves team effort, the overarching objective of these courses is to ensure that interpersonal relations among workers of different backgrounds are smooth and cordial.
In spite of such measures to integrate Asian workers into the mainstream of the company, as one HR professional mentioned, there is a tendency among Asian IT workers to associate and interact mainly with fellow Asian workers. To pull down barriers among workers of different backgrounds, IT companies have team-building activities both at the workplace and outside. Several HR professionals noted with satisfaction that such efforts had paid off and, increasingly, Asian workers were integrating well with their colleagues from elsewhere.

Training of IT workers

Four HR professionals of big companies reported that, like all other workers, Asian IT professionals also undergo some training and orientation programs from time to time. These include both training in specialized areas as well as product-related training. In addition, all workers have to undergo training in soft skills such as project management, time and people management, communications and the like. The HR professionals pointed out that they saw no need for any special training for Asian high tech workers. This, they said, was because all Asian workers were technically quite competent.

In smaller companies, training is often provided on the job. However, in all high tech companies, big and small, employees are allowed and encouraged to upgrade their skills by taking courses in community colleges or universities.

Gender equity challenges

It is a truism that the high tech sector is overwhelmingly male dominated. As such, this project probed whether HR professionals were cognizant of issues of gender inequity and what steps they were taking to deal with this issue. All the HR professionals interviewed – five of whom were women – were acutely aware of the problem of gender inequity as reflected in the low representation of women in the IT workforce. They all mentioned that their technical workforce was preponderantly male and that they wanted to remedy the situation.

Unfortunately, there are no immediate solutions to this problem, since the HR professionals reported that the vast majority of resumés they receive are from men. Only rarely does a female engineer apply. Also, they said that the pressure to hire quickly was so strong that they could not do much, other than hire the first suitable person available for the job. When asked whether, other things being equal, they would consciously choose a female, they said they would. But, they also explained that such occasions arise very rarely.

Fortunately, the advent of Asian IT professionals appears to have increased the representation of female workers. HR professionals revealed that there were more women among Asian professionals than among their Canadian counterparts. To remedy the latter situation, almost all high tech companies have instituted scholarships for women who opt for engineering at both the university and high school levels. Also, the HR personnel said that to create awareness among young women that they could pursue successful careers in engineering, they arranged career talks in educational institutions by female IT workers and presented them as role models. These efforts, however, will take some time to yield results.
Another fact that HR professionals mentioned was that there was, by and large, no gender-based discrimination at the workplace. They also claimed that except for the odd case, they were not aware of any systematic discrimination against Asian IT workers.

The Employees' Perspective

Profile of the IT professionals

Before presenting the findings of the interviews with high tech professionals, we wish to present a general profile of the IT workers. The most striking factor about the IT workers was their relative youth. Almost all IT workers who participated in the interviews were in the 25 to 35 years age group, with their average age being 32 years. Except for the Canadian-born workers and the HR professionals, the rest of them were visible minorities. All of them were from Asia, the majority of them being Indians. The majority of Asian workers were either single or recently married. In contrast, the Canadian-born respondents were all married and had children.

The average work experience of the interviewees, both in Canada and abroad, was 5.6 years, while they had spent 2.5 years in their current job. In terms of their designation, the interviewees ranged from new hires who had been in the workforce for only a year or so, to those at the level of manager. They were all well-qualified, with half of them (51%) holding Masters degrees, while those with Bachelors degree constituted 42%. In addition to university degrees, several of them had obtained diplomas or certificate courses in different areas of computing. However, the different levels of qualifications did not affect their salary scales.

With an average annual salary of about $81,390, they belonged to the category of high income earners. On a scale of one to ten, where one represented total dissatisfaction, and ten, total satisfaction, the IT workers rated their compensation as 7.3.

Since the focus of this study is mainly on Asian computer professionals, it is important to appreciate their socio-economic and cultural background. The majority of Asian IT workers hail from middle class backgrounds in their homelands. All of them are market-driven migrants, or economic migrants. In other words, the primary goal of Asian IT workers is to maximize their earnings, increase their opportunities for mobility in their profession, and secure their socio-economic status in the shortest possible time-frame, in a foreign land. Besides, in most cases, Asian IT workers, who earn in Canadian dollars, have to share some financial responsibilities for their families in their homelands. Then, in several instances they have an obligation to help a family member improve his/her life chances by helping them immigrate to Canada or to enter graduate school. Taken together, these factors motivate an Asian IT worker to constantly improve his/her earning potential.

Furthermore, except for some high tech immigrants, the majority of Asian IT workers do not have a kinship network in Canada. Thus, when they come here, Asian high tech workers have to establish themselves from scratch. The absence of a family network and the alienness of the new culture in which they are trying to carve out a niche for themselves make them feel more insecure than most others. A popular and well-founded assumption of Asian IT workers is that they should fully secure their financial status as soon as possible to avoid getting into difficult circumstances. This, coupled with the fear of failure, propels them to work diligently and give a good account of themselves.

Being cognizant of these general characteristics of IT workers will enable one to better appreciate their values and world views.

Asian IT professionals and the IT sector in Canada

Canada has a thriving IT sector and a number of its companies produce world-class technologies. Unfortunately, except for a handful that dominate their respective fields, Canadian high tech companies are not well-known abroad. Of the 47 Asian immigrants interviewed for this project, 33 did not know anything about Canadian high tech companies or about the fact that Canada has a flourishing IT sector before coming to Canada. The 14 others barely knew about some famous Canadian companies like Nortel and Corel and nothing else. One of the themes that was repeatedly mentioned in the interviews was that most Asian workers just did not know that Canada has a sophisticated high tech sector conducting world-class R and D. According to the interviewees, the reason for their ignorance was that, unlike big American, German, and Japanese companies, most Canadian IT companies did not advertise either themselves or their products. Asian IT professionals belonging to all three categories also stressed that the Canadian embassy/ high commission in their homelands did not do much to publicize Canadian companies. In contrast, they mentioned that German, American, and even Singaporean embassies routinely held huge career fairs and attracted the attention of IT workers. Asian IT workers were mainly recruited by IT placement agencies in their home countries. Many of them got to know about Canada and Canadian IT companies through these head-hunting bodies.

Perhaps because of the low visibility of Canadian companies, nearly half of all Asian respondents said that Canada was not their first choice when they were thinking of going abroad. To a certain extent, Canada is not the first choice of most Asian IT workers and immigrants because they all know more about the United States and its IT industries. The United States has successfully marketed itself abroad as "a land of opportunities." Besides, the US dollar stronger than the Canadian dollar. In contrast, Canada is just known as a country where it snows all the time. Because such misconceptions abound, nearly half of all Asian professionals did not consider Canada their preferred destination.

Interestingly, while discussing their Canadian experience, most Asian IT workers not only expressed satisfaction but also mentioned that they did not expect that Canada could offer all it does: friendly people, advanced technology, high quality of life, and so on. All of which point to the fact that most Asian IT workers simply did not know much about Canada and its IT industries.

In the last five years, there seems to be a growing awareness in Asia about Canadian high tech companies, mainly because several tech recruiting agencies have promoted Canadian companies. Such promotion, both abroad and at home, has meant that Asian professionals seeking jobs in Canadian companies could find them easily. Thus 41 of the 47 Asian professionals belonging to all three categories – graduate students, high tech immigrants, and temporary workers – reported that they did not experience difficulty in finding employment in the high tech sector. Only six respondents belonging to the immigrant and graduate student categories complained that they had to wait for a while before finding work. Significantly, a couple of high tech immigrants with Indian qualifications and experience, mentioned that their prospective employers here were reluctant to hire them because they lacked "Canadian experience and qualifications." What is important to note, though, is that these respondents eventually found work in Canadian companies.

Another positive finding of the interviews was that the vast majority of Asian IT workers (41 respondents) said that they experienced no difficulty in obtaining the necessary papers for working in Canada. Included among them were those who applied for landed immigrant status both here and in their homelands. They stated that the application process was simple and straightforward. Temporary workers who came under the Fast Track Pilot Project reported that they had to do nothing except present themselves for an interview at the High Commission. Of all three categories, they were the ones who did not experience any difficulties. The complaints of the other six mainly pertained to bureaucratic delays, mix-up of details, documents, addresses and such other matters. All in all, Asian high tech workers did not find it particularly difficult to obtain the necessary papers for themselves.

Paradoxically, however, several of them, mostly high tech immigrants and those who obtained landed status after coming here, complained that their spouses and parents faced delays and difficulties obtaining a visa to visit Canada. In some instances, Asian high tech workers were displeased that they could not get their family members here, in spite of submitting all the relevant sponsorship documents. These respondents stated that the whole immigration/visa process must become more streamlined and relaxed. While making this demand, several workers claimed that, in contrast to Canada, it was easier to bring one's parents to the United States. This claim, however, was based on anecdotal evidence and not on any clear understanding of the rules and regulations guiding immigration and visa procedures in both countries.

Nature of work in the high tech sector

A striking feature of the high tech sector is that workers are very particular about the nature of the work assigned to them. In the high tech industry, the length of one's service is not as important as the specific tasks one performs. This means that the technical competence of an IT worker depends on the type of assignments (s)he has handled. Generally speaking, all IT workers want to be given work that is challenging and interesting. In other words, they seek work that utilizes their skills to the maximum extent and offers new learning opportunities that enhance their skill base. By this token, the vast majority of workers (49 respondents) reported that their work was interesting and challenging. Only six respondents, all of them Asian IT workers, did not think so. Interestingly, all Canadian-born respondents and almost all temporary workers and graduate students found their work interesting. Some high tech immigrants and grad students found their work somewhat lacking in appeal and challenge. This was mainly because, in some cases, since they were new to the Canadian workplace, they were assigned routine work such as testing, debugging, and design verification.

A significant fact that came to light from the interviews was that in big IT companies, the pressure to perform is not that intense and the work itself, sometimes, lacks creativity.

From the responses of the interviewees, it is apparent that they have very specific and well-defined notions of what constitutes interesting work. By and large, interesting work is something that forces them to exert their mental energies to the maximum. It involves the use of the latest technology. It results in a product that is in great demand and has market value. IT professionals pay special attention to the marketability of the product on which they work because it has a bearing on the value of their stock options. Besides, working on a marketable product using the

latest technology ensures that their own market value is high. It also provides them opportunities to join new start-ups, change jobs and enhance their marketability.

The way work is broken down and assigned is also crucial for IT workers. They find work enjoyable only when they are given specific responsibilities – "feature development," in their jargon – that they claim as their unique contribution. In other words, in any given product, an IT worker wants to be involved in developing a particular feature of the product. Obviously, the more features one develops, the more versatile one is supposed to be. The assignment of work on such neatly defined lines also promotes a sense of accomplishment when the product is released on time.

Another facet of work that concerns all IT workers is whether or not it utilizes all their skills, abilities, and talents. Obviously, not every assignment can use all the skills one has, yet, on the whole, 35 of the 55 respondents felt that their work uses all their abilities and talents, while 20 thought they had more to offer than the work demanded. Again, while almost all Canadian-born respondents reported that their work challenged them to the utmost, half of all high tech immigrants and graduate students disagreed. They felt that their skills were not being utilized in an optimum manner.

These responses indicate a preference among Canadian employers for North American qualifications and work experience. This is not to suggest that those who do not have these are denied good assignments. Yet, generally speaking, workers who have immigrated from other countries and directly entered the workforce here have to prove themselves initially before being given challenging assignments. The same holds true in the case of some former graduate students. They too have to prove their mettle before moving on to more demanding work. Having noted this, it must be pointed out that since almost half of all immigrants and graduate students have started working only recently, they perhaps have to perform routine tasks before being shifted to more challenging work.

Working conditions in the IT sector

In view of the shortage of skilled IT professionals, all high tech companies strive to provide congenial working conditions and good facilities to their workers. Important among them are: flexible working hours, option to work from home, excellent on-site exercise and recreation facilities, and day care for the children of the employees. In addition to these standard benefits, most companies nowadays provide different types of facilities to their workers to enhance their working conditions. For instance, at one company, workers who choose to stay to work after 6.00pm can order supper from a designated restaurant at the company's expense. Several single employees take advantage of this facility and work until late evening. More or less similar facilities are available at other companies too.

Similarly, after working long hours to meet deadlines, workers are compensated in a number of imaginative ways. They are given tickets for a hockey game, or the manager takes out the entire group for lunch or dinner, or employees are given vouchers to entertain themselves in any manner they please. The launch of a product is always accompanied by a huge party to boost the morale of those who worked for it. Besides, all IT companies conduct team-building recreational activities such as laser tag, broom-ball parties, golfing, playing pool, picnics and outings. To

keep the stress levels at work under manageable limits, one big IT company provides two bottles of beer free of charge to every employee on Fridays after work.

IT workers mentioned these facilities during the interviews and expressed their satisfaction about their working conditions. All these fringe benefits keep their motivation levels high. This explains why almost all workers who are, technically, required to put in 37.5 hours per week, end up working for anywhere between 45 and 55 hours. Barring a couple of big companies, most of them do not give their workers overtime salary. Instead, they provide performance-linked bonuses, stock options, and awards. Not surprisingly, therefore, in spite of putting in such long hours, 51 of the 55 respondents said that they were happy about the hours of work. Similarly, 51 employees reported that they did not find their work stressful. What is particularly significant about these numbers is that, cutting across the four categories, all the IT workers interviewed believed that they enjoy excellent working conditions.

Motivation and training at the workplace

One of the themes that interviewees emphasized while explaining why they change jobs or migrate to the United States or elsewhere pertained to the level of motivation that the workplace offers. As is well known, motivation emerges as a combination of several factors. Chief among them are a challenging assignment, friendly and helpful colleagues, access to resources, scope for innovation, input in the decision-making process, opportunities to learn new skills, and encouraging peers and mentors. Interviewees belonging to all categories emphasized these points in their responses. In all, 50 out 55 respondents stated that their work atmosphere kept them well motivated. IT workers who spoke positively about the level of motivation at their workplace emphasized the following points:

> **Question: Does your work atmosphere keep you well motivated?**
>
> **Answer**: Yes, especially if we know how important the project is – how the project will affect the whole sales of the product, so this gives us motivation to do it on time.
>
> **Answer**: Yes, I think I can say that I do look forward to going to work because of the entire work environment and the way the company tries to look after the employees, so I think it is definitely a big plus point where employees actually are willing to work and are looking forward to coming to work.

An important component of motivation is the opportunity to hone one's technical skills. Overall, 47 of the 55 interviewees reported that they were improving their skills, knowledge base, and abilities on their jobs. Only eight respondents said they weren't. These points were apparent from their observations during the interviews.

> **Question: Do you feel you are improving your skills, knowledge base, abilities, and talents on your job?**
>
> **Answer**: Yes, actually I am improving a lot on the kind of talent I have brought to this country. When I came here I was just a three years experienced guy who had knowledge of C++ mainly, and after I came to Canada I could work on many platforms with many people and I learned from them. I am learning new technology every day over here, because this is North America – this is where the new technology begins.

> **Answer**: I don't think I am improving. I am just doing the job which I was given. It lacks creativity, that's what I would say, and I was expecting that from my job. Not everybody expects that – people think that you do this one over and over again and you get paid, but I thought that if I am creative, then I can succeed in my life more, at a faster rate than others, so I lack that. I don't know about the US or India, but that is something I was expecting and it is not there.

In addition to their desire to upgrade their skills on the job, IT workers also expressed their interest in more formal, structured training programs. Fifty out of 55 respondents said that they expected their employers to provide more training opportunities. Only 41 interviewees were happy with the training opportunities that their companies currently provided. Nearly a quarter of those interviewed felt that they did not get enough training from the company. Of these, a majority were high tech immigrants, followed by temporary workers. Many of them work in smaller companies that have neither the resources nor the ability to provide elaborate and generic training programs. All they do is provide product-related training on the job. Hence, Asian workers in such smaller companies feel that they are not being adequately trained.

IT workers feel strongly about training for two reasons. First, they have a fear that their skills might become obsolete, given the rapidly evolving nature of technology. Consider, for instance, the state of those who had expertise in computer languages such as Cobol and Fortran that have now fallen into disuse. High tech professionals are mindful that they might be outpaced by technology. Second, being up-to-date in terms of training in the latest technologies is their only hope for success.

From the interviews, it is clear that a sizable section of the Asian IT workforce is concerned about training opportunities in Canadian companies. High tech companies must deal with their concerns soon, in order to retain their services.

Recognition and appreciation of work

A significant revelation of the interviews was that 51 out of 55 IT workers were satisfied with the recognition and appreciation that they received for their contributions.

As part of their efforts to keep motivation levels high, all IT companies have recognized the worth of appreciation and rewards. As noted earlier, all of them have generous schemes for acknowledging the contributions of their employees. Recognition is conferred in a variety of ways. Often it is an award like "Employee of the Month" which includes a certificate and a cash prize. Some companies offer "performance bonuses." Lately, most companies have adopted novel methods for appreciating the work of their employees. One high tech company in Ottawa honours the most productive employee of a group every month by loaning him/her a jeep known as a "Hummer" for a few weeks. Similarly, several companies provide other prizes such as tickets for sporting or musical events, electronic gadgets, and trips to scenic places. But, the reward that most employees prefer and look forward to are stock options. In the interviews, IT workers clearly stated that they thought that granting stock options was the highest form of recognition.

In their bid to keep ahead of their competitors, most high tech companies are now offering awards and rewards – such as stock options, bonuses, gift items, paid holidays and the like – that were unthinkable a couple of years ago. This trend was inaugurated by the Canadian branch of an American IT company. This company uses rewards not only to retain crucial IT workers but also to ensure that they give their very best to the job and come up with innovative ideas. The most important aspect of this new scheme is that it is instantaneous and there is no limit on the rewards one can get. This strategy has paid off handsomely. Other companies have not managed to keep apace with this trend.

Asked whether he was satisfied with the recognition that his employer conferred on him, this is what an Asian IT worker at the American company had to say:

> **Answer:** Yes, one hundred percent! First of all, how do you measure that your work is appreciated and valued? A simple e-mail saying thanks for this? Secondly, even if you report to a manager, he never takes the questions – he tells them, he is the person on the project, ask him the questions. So, suddenly you become visible 100% to the Director and up, so people know you by name, and that is tremendous visibility they encourage. Thirdly, the compensation – it is not like just salary – if you do a good job there is a reward coming every month – that is the significant monitor. If they just show you token gratitude by saying that, yes, you worked hard, you delivered the stuff before time so here is a reward, that cash reward or stock option reward is pretty huge, some times it is more than a year's salary. This is something unique. I have never seen this, but later on I got to believe that because my friends said that is how almost all American companies work. You deliver and you are rewarded. It keeps you motivated, what else do you need? Another good point is the structure in the organization. You don't need to be motivated to be promoted. For example, I don't need a special motivation that I have to become a Manager to get my salary. There are a lot of people reporting to managers who earn two times the manager's salary – this is a typical funny thing I have seen – the Manager is say Grade 10 and there will be a lot of people working under him, as a technical lead, who are Grade 12, they are earning almost 1.5 to 2 times the manager's salary. So, there is no cut-throat competition the next time I want to earn more salary, I have to become a manager. There is no need. You do your job, you do the best and you are automatically taken care of. So that is the funny structure, a lot of band salary people reporting to a lower ... if somebody wants to become a manager, it is his choice.

Such positive views are shared by many Asian workers.

Collegiality and discrimination at the high tech workplace

With the influx of skilled workers from abroad, the high tech workplace faces new challenges in dealing with cultural differences and promoting cohesion within its multicultural workforce. Several companies have made cultural sensitivity training and diversity training mandatory for their managerial cadre to ensure that they communicate effectively with visible minorities. Newcomers from abroad or those who join the workforce after graduating from a Canadian school are provided with support, such as language training, to ensure their smooth transition into the workforce. Companies also routinely set up team building activities to promote cooperation and camaraderie among the workers.

These initiatives have paid off as 54 out of 55 high tech workers found their colleagues helpful and friendly. Broken down by categories, the response was even more encouraging. All Canadian-born interviewees (8) mentioned that they found their colleagues, including workers from abroad, very helpful and friendly. Visible minority workers belonging to the other three

categories also echoed these views. Thus all but one graduate student said that they found their colleagues cordial and helpful. Interviewees also mentioned this point when asked what they liked the most about their jobs.

An Indian high tech worker had the following to say about his Canadian colleagues:

> My manager is a Canadian person and I think he is a truly amazing guy – he is one of the reasons why I like to go to work and stick to the company, because of the way he manages – the way he gives you freedom to decide things and I think I did not feel any kind of racial or any other kind of discrimination ever in the work environment with respect to my Canadian colleagues. Socially everything has been fine as well – we have a lot of parties and a lot of extra non-work activities and we have things like going for lunch together where we discuss no work related issues and there are a lot of outings, so I think all these things actually establish a close bond between the employees – different people. I think I am pretty satisfied with the way things are so far. My Canadian friends are very friendly and helpful – absolutely.

Positive though this comment is, it should not lead us to believe that the high tech workplace is completely free from friction. Though 54 of interviewees referred to their colleagues as "friendly and helpful" it does not mean that in all instances the relationships are smooth.

During the interviews, several Asian IT respondents made off-the-record remarks about what they perceived as instances of racism and discrimination; some expressed their views openly. Thus five graduate students and five high tech immigrants stated on record that there is subtle discrimination at the workplace. Subtle discrimination refers to forms of discrimination that are not readily apparent. Examples of such behaviour include snide remarks couched in seemingly polite terms, unsavory references in general to people from developing countries, and poking fun at the cultural traits and practices of foreign workers. They manifest themselves in "civil" ways but they negatively impact the members of visible minority groups. On a related note, two graduate students and four high tech immigrants openly complained that their Canadian colleagues either ignored or offended their cultural sensibilities and ethnic heritage.

Several of those who were unhappy belonged to the Muslim community. Their unhappiness was directed against their Canadian colleagues. As we mentioned earlier, most major high tech companies have on-site places of worship for Muslims and most Muslim employees use them regularly. In some instances, Muslim high tech workers reported that some of their Canadian colleagues made trivial and dismissive comments about the practice of religion in a secular place like an office. Apparently, some also dismissed their Muslim friends for their religiosity. The following comments give a sense of the muted tensions in the workplace:

> **Question: Do you feel that there is subtle discrimination in the high tech workplace?**
>
> **Answer**: Definitely yes. No question about it. And unless it is addressed, there will always be a problem because in the first place, even myself thinks that way, that foreign workers are always going to be cheaper … the only reason the high tech industry is going to be interested in foreign workers is because they are expected to be cheaper. Somehow a Canadian works at a Canadian salary, whereas immigrant workers are expected to be cheap.
>
> **Answer**: Maybe feeling is there but not really proven. I don't feel myself, but colleagues from other countries, sometimes we discuss and they say if you are not white you cannot be manager,

but I saw some people who were not white and they are managers, so...may be there are less managers higher up.

Question: Did you ever have an unpleasant encounter with your Canadian colleagues?

Answer: Oh yes – at clients' sites – in fact I was at a particular government project where one of the government employees there was ... an unpleasant person for no reason at all. Basically, that individual resented me for who I am. So my answer is yes – there is resentment in the workplace in Canada to put it bluntly. And it only compounds that my work is as a consultant so sometimes I am not welcome in the first place – I am resented.

Although nearly one-quarter of all Asian IT workers (12 out of 47) feel that there is subtle discrimination in the workplace, two factors need to be highlighted. First, given the small size of the sample, one can, at best, conclude that the above comments are suggestive of some discrimination at the high tech workplace. To determine how widespread it is and what its consequences are will require further research. Second, it is interesting that Asian IT respondents did not cite discrimination as the clinching factor in their decision regarding whether they should stay here or go to the United States or elsewhere. In fact, across the board, high tech workers seem to be more concerned about the technical challenges of their assignment, their compensation and their professional prospects than issues like discrimination and racism.

Expectations of IT workers from their employers

As stated earlier, since there is a great demand for their skills and since they can afford to get jobs easily, high tech workers tend to pointedly articulate the things that they like and dislike about their work. In other words, they have no doubt about what they should get, a fact that is also clear from their expectations of their employers. In the detailed interviews, when asked what could their employer do differently to keep them working at their present job, high tech workers put forth the following requirements:

1. More stock options/higher compensation
2. Challenging and interesting work
3. More technical opportunities
4. Freedom to make decisions regarding technical matters

The most revealing aspect of these demands is that higher compensation is the most important issue for IT workers of all categories. The other three expectations are also tied to the issue of increasing one's earning potential and enhancing one's marketability.

Furthermore, any initiative in the high tech sector that compromises the IT workers' compensation will, obviously, be viewed negatively. An Indian high tech worker who holds a Ph.D. from a Canadian university made an interesting observation in this regard:

Question: What can your employer do differently to keep you working at your present job?

Answer: One t ng is that the company does well but it rarely shares its profits with the people who actually gen erated it. The groups that we worked with last year netted more than $6 billion. About 40 of us actually did the work, so the return of the rewards towards what happens is very small. W hat m akes p eople v ery a ngry i s that ... goes out and buys other companies, some of which do similar work as you. So they are almost sending out the idea that if you have a good idea, don't implement it in ... go outside and start your own company and then ... will buy you – then you will get the real value for work.

Thus, acquiring smaller companies or any other initiative that has the effect of compromising the earning potential of high tech workers evidently creates resentment and demotivates workers. Asian workers in particular, being economic migrants, expect their companies to provide them globally competitive levels of compensation.

Factors influencing the decision to move to the United States

An interesting fact that came to light from the interviews pertains to the question of going out of Canada to work – more often than not, to the United States. Overall, 31 of the 55 respondents said they were interested in relocating to the United States. This means that more than half of those interviewed wish to leave Canada. When this figure is broken down by categories, we see that only two of eight born Canadians were interested in moving to the United States. In contrast, nine out of 13 graduate students, eight out of 13 temporary workers, and 12 out of 21 high tech immigrants wish to go to the United States. In other words, 29 out of 47 Asian IT workers claimed to be thinking about moving to the United States.

It is important to note that almost all the three categories of Asian IT workers came to Canada in the first place, among other things, because this country provided them opportunities—education, immigration, and jobs—that they did not get elsewhere. Of course, in some instances they did not try to get into the United States. But there were others who could not go there either because their visa was rejected or because they did not get admission into graduate schools. In any case, after having come here and obtained either higher education or advanced training or both, they began t hinking o f g oing t o t he United S tates. Their m otives f or doing s o are v aried. G iven below are some of the views that Asian IT workers expressed on this issue:

Question: What, in concrete terms, do you hope to get in the United States or elsewhere that you feel you cannot get here? What factors would influence your decision to migrate?

Answer: Better job, better salary, less taxes.

Answer: There are a lot of high tech companies compared to Canada there, so the compensation and the opportunities are there, so there is competition going on so they are competitive. In Canada people do not have that much choice, so the c ompanies c an a fford n ot t o g ive a l ot o f money to their employees. That is not true in the US, so that is there – again – it is the choice of moving from one location of the same company to the other and it makes a lot of difference.

Answer: Bigger salary and in US dollars – mainly the lure of stock options and maybe the opportunity to work on more cutting e dge technology or i n a smaller start u p – a s maller f irm. That's about it.

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The findings mentioned above seem to indicate two major trends. First, over half of all Asian IT workers are thinking of going to the United States. In contrast, all but two Canadians wish to stay put in Canada. In the interviews, they cited factors like family ties, Canadian roots, and better quality of life, in support of their decision. Thus having or not having an extended kinship network in Canada is a crucial determinant of one's decision to stay or go. As stated earlier, an overwhelming majority of Asian IT workers do not have any family ties in Canada. Thus there is nothing to prevent them from going to a place where they feel they have better prospects. A related factor is the relative youth and freedom from encumbrances that are characteristic of the Asian IT workers. As young singles or newly married couples, they enjoy the freedom to uproot themselves at little notice for the sake of better prospects.

Second, for Asian IT workers, the main enticements for going to the United States are better compensation and lower taxes. Again, this is in keeping with their central preoccupation as economic migrants, viz., earning more money. Of those who expressed their desire to go to the United States, no one seemed to be aware of or worried about the high cost of living in Silicon Valley or elsewhere. Some of the interviewees did have concerns about the high cost of buying a house but did not elaborate too much. Perhaps the unstated feeling was that the higher compensation and stock options would take care of the increased expenses.

From the responses of the Asian IT workers, one got the sense that they had rather naïve views on living and working in the United States. Their notion that all they had to do was to get into the United States and the rest would fall in place seemed to be based on a number of misconceptions and inaccurate information. Most Asian IT professionals did not seem to realize the long-term costs associated with living in a highly competitive and demanding atmosphere. From the point of view of policy intervention, it seems that one way of retaining them is by disseminating correct information about the situation in the United States and Canada.

IT workers and the tax rate in Canada

One of the central concerns of IT workers in Canada relates to the tax rates in this country. Fifty-one out of 55 high tech interviewees stated that the Canadian tax rate is very high. Of these, all Canadian born interviewees and temporary workers share the view that our tax rates are too high. Likewise, 11 out of 13 graduate students and 19 out 21 high tech immigrants also subscribe to this view.

On the whole, only 14 out of 55 respondents felt that taxes were justified, considering the social security benefits the government provides. More than two-thirds of all those interviewed (38 out of 55) disagreed and felt that high taxes could not be justified for any reason. It must be noted that even those who supported the tax rate qualified their support by expressing their concerns about the way the government spent their tax monies.

Of those who oppose the Canadian tax rate, the Asian IT workers are most vocal. Eight out of 13 graduate students, 15 out of 21 high tech immigrants, 11 out 13 temporary workers, and 4 out of 8 Canadian born respondents felt that taxes were not justified, regardless of the social security benefits the government provides. However, in the case of Canadian-born respondents, they clarified in their comments that they were not so much opposed to the taxes as to the "fact" that

their monies were being ill-spent by the government. So, in effect, more Canadian-born workers support taxes than the numbers above would suggest.

Here is a sample of opinions on why IT workers oppose Canadian tax rates:

Question: What do you think about the Canadian tax levels, which some say are high and responsible for driving people south of the border? Are taxes an issue for you?

Answer: They are an issue to an extent – I find them extremely high. Even if your compensation in the US is not high, the lower taxes offset it. So, you are making as much there as you are here though you are getting lower pay. For me, I don't use half of the benefits that I am paying for so it just seems a big waste. From January to June you are working for the government and the rest of the year, it is for yourself so it just seems a big waste. I am concerned about that. It could be one of the issues that would drive me from Canada.

Answer: Taxes bother me a lot. Especially when they waste my money. They give away, this EIC fee, immigration boondoggle where they were giving away grants to political hacks or cronies or whatever or padding people's ridings so they can get elected. That really ticks me off. I think we should spend our money more wisely and should definitely let the people who are working hard for their money keep their money so they can put it back into the economy.

Answer: Taxes are an issue – they are really high in Canada. Granted, the benefits are there, like health care, but for me, my priorities would not be health care when I come. As a 25-30 year old person, my priorities are not health care. My priorities are making as much money as I can, and if I look back now, coming five years in Canada, had I been five years in the US, I think I would have a lot more money. We are paying taxes and they are going into the health care system. Not to say that the health care system is bad or anything, but just… maybe 20 years from now it will be useful for me, but as of right now, my priorities are to make as much money as I can. So, if I am paying a lot of money in taxes for which I am not using a lot of money for myself, or any of the money, then I feel it is a waste. That is a big issue for me.

Question: Considering the social security benefits – health care and education, for example – that this country provides, would you say taxes are justified?

Answer: There is free health care which I don't agree with – I don't use it – maybe when I am 60 it will be beneficial for me or later on, but so far I have not really benefited from it and I wouldn't mind paying for it when I have to. I think in Alberta they have a two tier system where you can opt in or opt out – I don't know it in great detail, but something like that sounds more attractive.

Answer: No. I think that's ***. I think we could still have the same level of health care and all our levels of social … I don't expect to get CPP, I'll never see a CPP cheque in my life. It'll be gone, the government will mismanage it, or they'll spend it or they'll raise our CPP even higher but by the time the boomers are through the CPP part, it'll be all gone. I'm not even counting on it. I'm saving my own money because if I don't the government's not going to take care of me. That's a big issue. They waste money on so many things. They cater to special interest groups, they just give away everything.

It hasn't gotten to the point where I've actually gotten fed up enough to do something about it because I still value living here in Canada. I think it's still worth it. I think we are seeing some progress although I don't think it's fast enough in reducing taxation and reducing the debt. I personally haven't gotten fed up but I have colleagues that talk about it all the time. If I was single, I would think about it a bit more, but because I have a family I'm not as tempted.

Before analyzing the significance of these findings, we wish to reiterate that the sample size being small, any conclusion will be only suggestive of a larger trend which must be confirmed through more detailed investigations.

From the comments above, two facts are apparent. First, IT workers of all categories are more concerned about what they consider to be "high" taxes. Second, among IT workers, Canadian-born workers do not mind the tax rate if they are assured that their monies will be spent wisely for social programs. This means that only Asian IT professionals of all categories are opposed to taxes, regardless of any justification provided in its favour.
Unlike Canadians in other sectors, IT workers are more worried about tax rates because of their peculiar circumstances. First, IT workers are among the most highly paid groups of workers. Unlike most Canadians, they can earn handsome returns from stock options. As a result of these factors, they feel the "burden" of the tax rate with greater immediacy than other workers who do not have access to such income.
Moreover, as is well-known, compensation reflects demand and supply. IT workers feel that they are riding on the crest of a wave which may not last long. Hence, they argue that they must not be taxed heavily. Most importantly, IT workers feel they deserve to keep a major chunk of their income from salaries and stock options because they take calculated risks with respect to stock prices, particularly while joining start-ups. There is no knowing when their stocks will go down in value. Thus the argument of IT workers is that since their income is based on their skills and the risks they take, they deserve to keep the rewards. Also, given the fact that globally there is a boom in the IT industry and that they can market their skills virtually anywhere in the world, IT professionals feel no need to stay here and pay high taxes.

The difference in perception between Canadian-born and Asian high tech workers seems to be rooted in their perceptions of themselves and their place in Canada. Canadian workers seem to have a sense of belonging to Canada. They tend to see themselves as part of the larger community here and seem to be interested in the well-being of fellow Canadians. Moreover, they were raised on the ethos of a welfare state. In other words, as a result of their Canadian upbringing, they appear to have a commitment to communal well-being, although it is getting frayed at the edges. Hence, Canadian-born IT workers seem to be not entirely opposed to the high rate of taxation.

In contrast, as economic migrants, Asian IT workers tend to adopt a short-term, perspective and have quite different motivations from their Canadian counterparts. Being relatively young, their primary concern is to maximize their earning potential and their opportunities, facts that they mention in their comments above. Though their objectives are understandable to some extent, their desire to pursue them to the exclusion of everything else is at odds with the Canadian way of doing things. For instance, it is sad but true that in spite of reaping benefits here – in terms of training, exposure, better career opportunities, and superior quality of life – most Asian professionals felt no obligation to pay for the privileges they enjoy. Perhaps this situation could be remedied if the government and industry educated Asian workers about the benefits of the Canadian social security system and the importance of nurturing and supporting it.

Another point apparent from the comments of the Asian professionals was that in their zeal to achieve their financial goals, they unwittingly seem to ignore the factual inaccuracies on which

they base their decisions. One significant misconception they have is that while Canada has a high tax rate, the United States is almost a tax haven. From their narratives, it was clear that they just did not know enough about the current levels of taxation in Canada and the United States.

The policy implication of such erroneous impressions is that perhaps it would be easier to retain Asian IT workers if they were provided complete and accurate information about tax levels and the cost of living in Canada and the United States.

Uniqueness of the "Canadian Experience"

For all their complaints about the tax rate in Canada, the low level of compensation here when compared to the United States, and the long and chilly Canadian winters, 54 out of 55 respondents said that they would recommend Canada to a friend or family member. More interesting is the fact that even those who complained about discrimination and racism, felt that Canada was a great country in which to live. Overall, though, only 22 out of 55 respondents would commit themselves to staying in Canada for good, while 29 said they were not sure. Broken down by categories, we notice that 7 out of the 8 who were born in Canada want to live here for good. But, in the other three categories, 10 out of 13 temporary workers, 8 out of 13 graduate students, and 11 out of 21 high tech immigrants were not sure whether they would live in Canada permanently.

These figures might seem somewhat contradictory. On the one hand, the overwhelming majority of them are willing to recommend Canada to their friends and family members, but nearly two-thirds of foreign workers do not wish to commit themselves to living in Canada for the long-term. This, in spite of the fact that Asian IT professionals were fully aware of the advantages of living in Canada. As the interviews revealed, new Canadians, immigrants, graduate students, and temporary workers all appreciate the positive aspects of life in Canada. The friendliness of Canadians, ready acceptance of outsiders, high quality of life, concern for the well-being of the less privileged – these and many other factors endear this country to foreign-born IT professionals.

If life in Canada is so good, why then would they not want to live here? Obviously, Asian IT workers have deeply ambivalent feelings about living in Canada permanently. The reason for this ambivalence becomes clear when one recognizes that for a foreigner, a migrant in an alien land, goodness appears in the form of security. In other words, Asian IT workers are likely to describe their Canadian experience in terms of how secure life becomes not just for them, but also for their immediate family members.

Taken together with their attitudes toward taxation, it is clear that though Asian IT workers appreciate the positive features of Canadian life, they seem to think that this place is good for living, but only after one has earned enough to provide for one's retirement and saved money in a stronger currency. This is also the reason why several Asian workers stated in interviews that they wish to work in the United States but retire in Canada, mainly because the health care is free and the quality of life is good here. Also, several others mentioned that they came to Canada mainly to acquire Canadian citizenship as it is easier to obtain than American citizenship. But, for work and accumulation of wealth, they wish to go to the United States. Such inconsistency

and the fondness for the American dollar and Canadian lifestyle seemed to be typical of the outlook of most Asian professionals in this small sample. They see the benefits of peaceful living in Canada but are also lured by the high earning potential and greater opportunities that the United States offers.

The significant policy implication of such ambivalent perceptions of life in Canada is that to attract skilled IT professionals, it might be helpful to highlight not only the positive aspects of life in this country but also the fact that it can, indeed, offer the elusive security that foreign workers are in search of – in other words, that by living in Canada, they can still access the things that they think a secure economic position would afford them elsewhere. This means impressing upon Asian workers that though the rate of taxes appears to be high, life in Canada is much more secure for that very reason. At present not many Asian IT workers in the sample seem to fully appreciate how Canada has managed to maintain the "high quality of life" that they appreciate so much. The interviews appear to suggest that there is a need to not only publicize the positive features of life in Canada, but also the factors that sustain them.

Recruitment and retention of IT workers

When asked what, in their view, was the best strategy for recruiting and retaining IT professionals, the interviewees provided several useful inputs. They include providing better compensation, reducing taxes, providing challenging work, attracting more high tech companies, creating more opportunities for mobility within the company and outside, creating awareness of Canadian high tech companies, streamlining immigration processing rules, and recognizing the educational credentials and work experience of outsiders. In addition, they talked about issues such as the need for publicizing Canadian companies abroad, reducing taxes, and the like.

Two points deserve special attention. The first one pertains to a comment made by one HR professional in the course of the interview. She said that one important strategy for dealing with the paucity of skilled workers involves viewing the prospective candidate's background in a totally new light. She mentioned the case of a 42 year-old Canadian who spent his early years in the military and later acquired computing skills. When this person tried to find work in the high tech sector, he was repeatedly rebuffed because of his age and his previous background. So, the point the HR professional made was that the scarcity of skilled workers must force us to rethink the ways in which we assess prospective job candidates. The best strategy, she felt, was to not place too much emphasis on the candidate's previous career, particularly if it is not in computing. Instead, one must concentrate on what the candidate has to offer now, regardless of his or her age.

The second point, mentioned by a female IT worker from India, pertains to strategies for retaining high tech workers who come here. Here is what she had to suggest:

> Mostly, nowadays I see immigrants coming into the field, and immigrants coming normally from Asia, they are used to the hot weather and they really like that weather, so that is an issue, and second, to some people, the taxes. For example, why would a person stay in Canada if he can go to Texas where there are no taxes and get a job within ... itself? So, the job environment remains the same, the quality remains the same, technology remains the same – at the same time, he is getting pay in US currency with no taxes.

> Some people have their relatives around, so that is another issue for them that may be their brother is there in Toronto, so why would they move to the US when they can visit him every long weekend. So that is another person, but for me, I have nobody here so I can pack my bags and go wherever I want. It matters for everybody and conveniently we can think about it.

The point this respondent is making is that one effective way of retaining high tech workers here is by allowing them to bring some of their relatives to Canada. If one has an extended kinship network here, then one is not likely to go to the United States and suffer isolation. But then the issue of allowing only IT workers to bring their family members is equally problematic. Since only four female workers were interviewed, all of them from Asia, one cannot make a definitive statement about their experiences. Yet, it seems that being an immigrant in a new country may be particularly difficult for women, compared to men, for these family reasons. The high tech industries could also help alleviate this problem by paying foreign workers for their annual trips to their homelands.

Key Conclusions and Issues

The situation in the IT sector in Canada and elsewhere in the world has changed considerably since the time the interviews were conducted. The pace of growth in the IT sector has slowed, thereby reducing the demand for high tech workers. The value of stock options has diminished. Another significant development is the move in the United States to further reduce taxes. Though Canadian governments have initiated similar measures, it could trigger the demand for a fresh round of tax cuts. Obviously, given its size and geography, Canada cannot remain immune from changes taking place south of the border. The fluctuations in the global labour market for IT-related skills has also affected recruitment and retention strategies in Canada. Opinions about the likely impact of these changes and their duration are divided. Some of these changes are considered transient while others are likely to have far-reaching consequences. Regardless of the current downturn in the demand for IT skills, which some think will change in the near future, this study has yielded useful insights about the recruitment and retention of high tech workers.

From our detailed discussion of the interviews, it is clear that the Canadian high tech sector enjoys several positive features and is viewed as such by employees. Thus there is a general consensus that Canadian companies provide interesting and challenging work, recognize the contributions of their workers, provide excellent work environment and training, ensure that the workers are well motivated, and provide opportunities for improving skills and abilities. Yet, as we saw earlier, over half of those interviewed were thinking of going to the United States or elsewhere. The question, then, is what recruitment and retention issues are relevant to keep high tech workers here and to attract new talent?

Before answering this question, we must take note of certain perceived disadvantages which do not lend themselves to policy intervention. These factors include the Canadian weather, the lower value of the Canadian dollar compared to the American currency, the lack of a large and dynamic place like Silicon Valley, the smaller scale of our economy compared to the United States, and the limited opportunities for career advancement, again in comparison to the United States. Not much can be done, at least in the immediate future, to change these drawbacks. Also, because of Canada's proximity to the United States, IT workers will inevitably compare

and contrast the situation here with south of the border. Given these constraints, it is only appropriate that we emphasize our strengths and try to make Canada attractive in ways that the United States is not.

Briefly, the key conclusions and issues arising from the interviews are as follows:

1. In the newly emerging, IT-driven world economy, Asian computer professionals are "citizens of the world." In other words, they are market-driven migrants whose main objective is to seek career opportunities that will enable them to maximize their earnings and savings in the shortest possible time. Asian IT workers have uprooted themselves from their homelands and come here in their quest for a better life. However, in most cases, Canada does not seem to be their final destination. Though they see many positive features in their jobs and in their lives in Canada, Asian IT professionals have not sunk roots in this country. Instead, the majority of them are attracted to the United States as it offers better career prospects, more disposable income, and the opportunity to work with some of the best and brightest people in their areas. It would useful to appreciate these factors while framing policies concerning recruitment and retention.

2.

a) In stark contrast to their fascination for the United States, the majority of Asian high tech professionals did not know much either about Canada or its IT industries before they came here. From the interviews, it became apparent that with greater publicity about our world class IT companies and our thriving IT sector, more knowledge workers might be interested in coming to Canada. Thus, agencies of the federal government, including embassies and high commissions, could collaborate with IT industries, professional bodies, and trade-related bodies to launch a publicity campaign in countries such as India and China.

b) On a related note, the visibility and profile of Canada among people abroad appears to be much lower than that of other Western industrialized nations, particularly the United States. Creating greater awareness about the positive aspects of life in Canada would be very helpful. Most people abroad do not seem to know much about the high quality of life in Canada, its multiculturalism, flourishing economy, and the myriad opportunities it provides for developing one's potential. Canada could highlight its strengths as one of the best places to live in the world. Those who know about Canada seem to have the impression that it is good for living peacefully, but that for professional success, entrepreneurial work, and accumulation of wealth, the United States is the best place. Such misconceptions could be corrected through providing objective and up-to-date information about what life is like at other high tech destinations in the United States. Simultaneously, Canada could be marketed as a unique country where one can enjoy both professional success and a superior quality of life.

3. One of the most significant findings of the interviews is that Asian IT workers appear to be misinformed or have misconceptions about a number of issues relating to life in Canada and the United States. Specifically, they have incorrect information in three areas: tax rates in Canada and the United States, cost of living and opportunities in both countries, and rules and regulations guiding visa and immigration procedures. Generally speaking, Asian workers

subscribe to the notion that the United States offers better career opportunities and charges less taxes. While it is true that tax levels in America are lower than in Canada, Asian IT workers seem to be misinformed about the extent and degree of difference in taxation rates. They also seemed to be oblivious to the hidden costs in America. Furthermore, Asian IT workers think that it is slightly easier to bring one's spouse or parents to the United States when compared to Canada. Again, their impressions seem to be based on anecdotal evidence since both the United States and Canada have reasonably comparable rules regarding visas and immigration policies. Most important, Asian workers do not seem to be aware of the high cost of living in big American cities and quality of life issues. It would be helpful, therefore, if government and high tech industries make efforts to erase such erroneous impressions among Asian workers and apprise them of the factual situation in Canada and the United States. Asian workers could be informed about the significance of all that Canada offers and the importance of contributing for the privileges one enjoys here. Newly arrived IT workers could be provided better orientation to their rights and responsibilities as prospective citizens. Imaginative programs and policies that foster a sense of belonging to the communities in which they live might be a good strategy for retaining IT workers in Canada.

4. One of the most effective recruitment and retention strategies could be to enable Asian IT workers to bring their educated relatives from their homelands and develop their own kinship network in Canada. This appears to be a promising measure as it could provide compelling reasons for high tech workers to stay in Canada. However, extending this privilege just to IT workers is problematic and might potentially conflict with the overarching objectives of family visitor and immigration policies. High tech industries could consider offering their foreign workers an annual or biennial expense-paid trip to their country of origin.

5. Canadian governments at all levels could facilitate closer interaction and partnerships between educational institutions and the high tech sector. Also, they could consider investing more in technical education at both the high school and post-secondary levels and explore the possibility of subsidizing high tech education. Special attention to enlist women in high tech education and careers might help as well. They could be encouraged through a combination of financial incentives such as generous scholarships and aggressive awareness campaigns.

6. Smaller Canadian IT companies could pay special attention to providing general training to their workers in soft skills such as communication and managerial skills, team building and leadership skills, cultural sensitivity training and so on, in addition to the product-specific training that is provided on the job.

7. Due to the limitations of the small sample, one cannot definitively state that discrimination based on ethnicity is widespread, but as some of the respondents spoke about it, it is would be fair to conclude that there is, at least, a perception of discrimination among some Asian IT workers. A proactive approach by employers that emphasizes the acceptance of diversity, difference, and special needs might help to allay the apprehensions of visible minority workers.

8. Some workers, particularly those with graduate level qualifications and working in big companies, voiced concerns that the work atmosphere in their company was not challenging enough in that it did not fully use their advanced training and abilities. They also said that instead of acquiring smaller companies in order to gain access either to their technologies or their workers, their employers could use their talents and reward them well. It would, perhaps, be helpful if big IT companies could address the concerns of workers with advanced levels of training and consider their views before acquiring smaller companies.

9. This report is based on a small sample. It can only indicate areas for future research. A larger study and a more thorough analysis of what IT firms and governments in other countries have done to attract and retain workers could offer insights about ways of improving our policies.

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Appendix A: Interview Guide

Section 1

Questions common to all temporary workers, high tech immigrants, and foreign students:

1. How and why did you come to Canada? Before coming to Canada, did you have a choice between working or studying here or elsewhere? Or, was Canada your first or the only option?

2. When you were in your homeland, did you know anything about Canadian high tech companies or about the IT sector in Canada? How did you get to know about Canadian high tech companies? Was it difficult to find work in a Canadian company? What did you know about Canadian companies and about your employer in particular?

3. Describe your experiences with the process of getting your documents to come to Canada? Was it difficult to get a Canadian work permit and visa? Did you have to wait long for a visa after getting a job offer from a Canadian high tech company? Did your prospective employer help you negotiate the bureaucratic hurdles involved in getting the appropriate documents?

4. Do you think that expediting the processing time for travel and work documents would attract more foreign workers and increase their retention in Canada?

5. How would you describe your experiences at the Canadian workplace? When you compare it with the work atmosphere in your own country and/or in some other place where you worked before, would you say there are significant differences? If so, what differences have you noticed?

6. What did you expect from the Canadian workplace? Did your experience at the Canadian workplace match your expectations? Explain how and why. Or, why not?

7. Describe your interaction with your Canadian colleagues both at the workplace and in social settings. Have they been helpful and friendly? Do you feel that there is some resentment about your presence and your work? Did you ever have an unpleasant encounter with your Canadian colleagues? If so, do you feel there is subtle discrimination in the Canadian workplace? Do you recall instances in which your Canadian colleagues, knowingly or perhaps unwittingly, ignored your cultural sensibilities, your ethnic heritage, or your minority identity?

Section 2

Questions common to all computer professionals

1. Did you find anything striking about the work atmosphere in your company such as high quality training, exposure to cutting-edge technology, friendly environment, team spirit, access to resources, scope for innovation and so on? Tell us more about all that you found new and unique in your company.

2. Tell me your impressions about the working conditions in your office. Do you find the work assigned to you interesting and challenging? Does it utilize all your talents, skills, and abilities?

3. On average, how many hours of work do you put in per week? Are you happy about the hours of work? Or, do you find your work a stressful experience?

4. Generally, would you say that your work atmosphere keeps you well-motivated? Do you feel that you are improving your skills, knowledge base, and abilities? In other words, do you find your work an enriching experience? What aspects of your work do you like the most? Is there something that you dislike about your present job?

5. Are you happy with the training opportunities and exposure to new technology that this job offers? Or, do you expect your employer to create more avenues for training workers in new and emerging technologies to keep their morale high?

6. Do you feel that your work is valued and appreciated? What makes you feel the way you do?

7. Does your employer, in your view, care enough to retain your services? Or, do you think better employer practices regarding retention are necessary? If so, what, in your view, are the most efficient ways of retaining workers in the Canadian workforce?

8. Are you optimistic about your career prospects in your company or, do you feel that you will be able to realize your full potential in a more demanding and rewarding atmosphere in some other company?

9. Regardless of your Canadian experience, or perhaps because of it, are you thinking of moving to the United States or elsewhere such as Europe, Asia etc., to work? If so, what factors would influence your decision to migrate? Do you know friends who have gone to the US from here and reported greater satisfaction and self-fulfillment? What have you heard about the American high tech workplace and about life in the United States from them? What, in concrete terms, do you expect to get in the United States or in other countries which you feel you cannot get here?

10. If you are planning to stay put in Canada, what is it about your Canadian experience that makes you want to remain here?

11. If your American experience does not match your expectations, would you consider returning to Canada?

12. On a scale of one to ten, where one represents total dissatisfaction and ten total satisfaction,

how would you rate the monetary compensation provided by your company?

13. What do you think about the current debate about the Canadian rate of taxation which, some feel, are high and responsible for driving professionals south of the border? Are tax rates an issue for you? Do you feel that you are being unfairly taxed by the government? Or, considering the social security benefits, free health care, and subsidized education this country provides, would you say that taxes are justified?

14. How much do issues of quality of life matter to you? Do you feel a sense of community here? Do you have friends and family in the community here? Do you feel you can enjoy a superior quality of life in the United States? If so, how did you arrive at this conclusion?

15. Describe your experience in trying to reconcile the demands of your work and your family obligations. Does your employer provide you some support to balance your work-home obligations? Does your spouse help you in reconciling the demands of work and home?

16. What are your career goals and what long-term plans do you have to achieve them?

17. Are you interested in staying in Canada for good? Would you recommend Canada and/or your company to a friend or a family member?

18. What, in your view, is the best strategy for retaining high tech workers in Canadian companies and for attracting new workers?

Section 3

Questions for the employers of computer professionals

1. Is there a shortage of computer professionals in specific sectors and has it affected productivity and the timely delivery of new products in your industry? What, in your view, are the best and most efficient short-term and long-term solutions to the shortage of skilled personnel?

2. To what extent does your company meet its human resource requirements through the recruitment of foreign workers? Since when have you relied on foreign workers to meet your HR needs?

3. What specific set of skills does your industry seek while hiring Asian professionals? Are there other gains from engaging Asian computer professionals?

4. What has your experience been with Asian computer professionals so far? Are you satisfied with their competence and work? Or, do you have to train them extensively before assigning them work? Do you have to train Canadian workers extensively?

5. What are the salary expectations of Asian computer professionals? Is it the same as that of Canadian-born workers? Or, are their expectations different? If so, why?

6. Have you lost high tech professionals to the United States or to other countries? If so, what factors are responsible for their migration to the US? What should the Canadian government do to retain such workers in Canada? Or, do you think the migration of workers is a normal sorting of skills in a globalized labour market? What steps are you taking to retain the highly qualified workers you have now? Will lowering taxes suffice to retain their services? Or, should the government take other steps? If so, what would they be?

7. Are you aware of any specific workplace concerns of Asian workers? Issues such as not being provided challenging and responsible assignments, lack of training opportunities, subtle forms of discrimination, and so on? If so, what concrete steps has your company taken to redress their grievances? Are such concerns shared by other non-Asian workers in your company? In this sense, do you see a difference between Asian computer professionals and their Canadian counterparts? Is this difference significant and does it impact their quality of work?

8. How has the influx of Asian workers affected gender equity in the high tech sector? What concrete measures have you initiated to deal with this problem?

9. Instead of recruiting foreign workers from abroad, to what extent does your industry hire and provide training to immigrants and non-immigrants alike with some computer background who are already in Canada? Can such recruitment and training eliminate or minimize the need for foreign workers?

10. If you had a free hand in shaping social policy to deal with the shortage of skilled workers, what changes would you make? What do you think needs to be done to address this problem? Who should take these actions?

Appendix B: Survey Questionnaire

Name in full **(optional)**:_____

Address **(optional)** :_____

Phone (W):_____

Phone (H):_____

E-mail:_____

How do you prefer to be contacted, if necessary (please tick the appropriate response):

Phone at work _____
Phone at home _____
E-mail only _____
Any of the above _____

Age: _____

Nationality: _____

Status in Canada (if not a Canadian citizen): _____

Since how many years have you lived in Canada? _____

Name of the company you are working for now:_____

Designation:_____

Provide a brief description of the nature of your work: _____

How long have you been at this job? _____

Salary range **(OPTIONAL)** (please tick the appropriate range):
$ 40,000 - 60,000 _____
$ 61,000 - 80,000 _____
$ 81,000 - 100,000 _____
$ 101,000 - 125,000 _____
$ 126,000 - 150,000 _____
$ 151,000 - 175,000 _____
$ 176,000 - 200,000 _____
Over 200,000 _____

Did you receive any of the following when/since you joined this company?

1. Signing bonus _____
2. Retention bonus _____
3. Overtime pay _____
4. Performance bonus _____
5. Other perks/monetary incentives (pl. specify) _____

Previous work experience:

Company	Position	Duration of employment	Nature of work

Educational background:

Degree	Institution	From - To	Specialization (if any)	Special academic achievement

Did your company provide specialized/job-related training to you? _____
Please specify the nature and duration of your training:
Skill related (technical) _____
Performance enhancing/management training _____
Other _____

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Author(s): Badrinath Rao

Corporate Source: Canadian Policy Research Networks

Publication Date: July 2001

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